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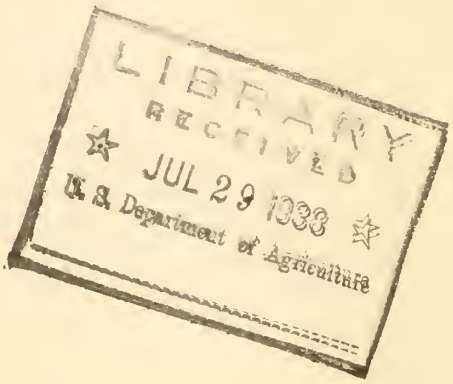
THE TARIFF ON LONG-STAPLE COTTON AND ITS EFFECTS



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THE PROBLEM AND CONCLUSIONS

The Tariff Act of 1930 placed a duty of 7 cents per pound on cotton having a staple of 1-1/8 inches or more in length and left shorter cotton on the free list.

The production of long-staple cotton in the United States during recent years has consisted almost entirely of Upland cotton with a staple length up to about 1-11/32 inches and a small quantity of American Egyptian or Pima with a staple length of around 1-1/2 to 1-3/4 inches. During the 7 years, 1930-31 to 1936-37, the total production of long-staple Upland in the United States averaged 744,000 bales or about 5.9 percent of the total domestic production of cotton. The average production of American Egyptian or Pima during these years was about 14,900 bales, all produced in Arizona. The combined production of long-staple Upland and Pima in this period averaged 6.0 percent of the average production of all cotton in the United States.

The principal foreign cotton that competes with long-staple Upland is Egyptian cotton about 1-1/8 inches and slightly longer in staple length, called Uppers throughout this report. The principal foreign cottons that compete with Pima are Egyptian Sakellaridis and other somewhat similar Egyptian cotton. The analysis is divided, therefore, into two parts. The first part deals with the effect of the tariff on Egyptian Uppers and American long-staple Upland, both of which have been designated for the purpose of this discussion as ordinary long-staple. The second part deals with the effect of the tariff on Pima and

imported long-staple cotton, mostly Egyptian Sakellaridis except in the last 3 or 4 years, all of which are referred to as extra long-staple.

Both American long-staple Upland and Egyptian Uppers are consumed in large quantities, both in the United States and in foreign markets. This being true, it follows that the reduction in the consumption of Uppers in the United States due to the duty and the resulting increase in the domestic consumption of American long-staple cotton would tend to be largely offset, as far as its effect on the price of Upland is concerned, by opposite shifts in the foreign consumption of these two growths. The mere fact that American long-staple Upland is on an export basis would therefore lead to the expectation that the duty would have much more effect on the location of the consuming market for this cotton than on the price at which it moved into consumption.

Two entirely different methods of analyses were used to make two independent estimates of the effect of the duty on the price of American long-staple Upland cotton. In the first of these approaches, the maximum effects of the duty on the price, consumption, and production of Egyptian Uppers were estimated and the indirect effect of these changes on the price of American long-staple Upland was approximated. In the second approach, the effect of the duty on the premium at Memphis of American 1-1/8-inches over 7/8-inch cotton was estimated and this effect on the premium was translated into an effect on the price of Upland long-staple. The two analyses agree in indicating that the duty raised the domestic price of American long-staple Upland less than one-fourth of the 7-cent duty above what it would have been without the duty. The analysis of premiums shows that the beneficial effect of the duty on the domestic price of American 1-1/8 inch cotton was undoubtedly less than 1.8 cents per pound on the average in the 7 post-duty years. This analysis also suggests that the duty may have raised the average price of this cotton only 0.2 cent or less during this period and that it hardly seems likely to have raised the average price by as much as 1/2 cent. The other analysis indicates that the duty probably benefited the price of the domestic cotton less than 1/2 cent per pound. It is believed these estimates are a liberal statement of the benefits conferred by the long-staple cotton duty on the price of American long-staple Upland cotton.

The duty caused the spread between the price of Egyptian Uppers in New England and in Alexandria to be approximately 7 cents per pound greater than it would have been in the absence of the duty. The analysis indicates that most of the effect of the duty on this spread took the form of an increase in the New England price. In fact, the indications are that the duty caused the New England price of a given quality of Uppers to average more than 6-3/4 cents higher and the Alexandria price less than 1/4 cent lower than would have been the case in the absence of the duty. This material increase in the United States price of Egyptian Uppers resulting from the duty was, as indicated above, associated with a much smaller increase in the price of American long-staple Upland thus widening the margin of Uppers over Upland in this market.

The data pertaining to extra long-staple cotton (Pima and Sakellaridis) are more limited and apparently less satisfactory from the standpoint of accuracy than those for ordinary long-staple cotton (American long-staple

Upland and Egyptian Uppers). Furthermore, it was not possible to obtain a usable estimate of the effect of the duty on the price of Pima from an analysis of premiums as was possible in the case of Upland. Despite the limitations of the data, the analysis of them indicates that the duty resulted in at least a slightly higher price of Pima than otherwise would have existed. In addition, a comparison of the competitive positions of Pima and of long-staple Upland suggests that the duty probably benefited the price of Pima at least as much as, and possibly more than, the price of American long-staple Upland cotton.

The duty appears to have caused the spread between the United States and foreign price of a given quality of Egyptian Sakellaridis cotton to average about 7 cents per pound greater with the duty than it would have without the duty. In the case of Sakellaridis it appears that the duty caused a smaller increase in the United States price and a larger decrease in the foreign price than was true of Egyptian Uppers.

INTRODUCTION

From July 1, 1883 until the Emergency Tariff Act became effective on May 28, 1921 all raw cotton was free of duty. In seven of the tariff acts prior to 1883 there was an import duty on cotton ranging all the way from 1/2 cent to 5 cents per pound. The Emergency Tariff Act of 1921 imposed a duty of 7 cents a pound on cotton 1-3/8 inches or more in length and cotton with a shorter staple was free. This duty was removed by the Tariff Act of 1922 which became effective on September 22 of that year. From that date until the 1930 Tariff Act which has been in effect since June 18, 1930 all raw cotton was again on the free list. The Tariff Act of 1930 placed a duty of 7 cents per pound on raw cotton having a staple of 1-1/8 inches or more in length and a duty of 10 cents per pound on the cotton of this length contained in all cotton manufactures except rags. Cotton shorter than 1-1/8 inches was left on the free list. This is the present tariff status of long- and short-staple cotton.

In the tariff revision of 1930, those who asked that long-staple cotton be placed on the dutiable list argued that if imports of this cotton were restricted, domestic producers would receive higher prices for their long-staple cotton. 1/ They were not interested in the revenue which might result from such a duty. The principal if not the entire purpose of the tariff on cotton, therefore, was to raise the price that cotton producers in the United States receive for their cotton. It is principally from the standpoint of the effect of this duty on the price received by cotton producers in the United States that this report is written.

1/ The term "long-staple" is entirely relative. In India it means one thing, in Egypt another, and in the United States still another. When applied to American cotton, particularly by domestic buyers and sellers, it is rather generally accepted to mean cotton 1-1/8 inches and longer in staple length. This is the meaning of the term throughout this report. Cotton with a staple length of 1-1/8 to 1-11/32 inches, hereafter referred to as ordinary long-staple cotton, is distinguished from cotton 1-3/8 inches and up in staple length, hereafter referred to as extra long-staple cotton.

During recent years the United States production of long-staple cotton has consisted almost entirely of Upland cotton with a staple length up to about 1-11/32 inches and a small quantity of American-Egyptian or Pima with a staple length of around 1-1/2 to 1-3/4 inches. Before 1919 the domestic production of Sea Island cotton amounted to as much as 50,000 to 120,000 running bales (of around 400 pounds) per year. This cotton was of the very finest quality grown, with a staple from 1-3/8 to 2 inches or longer. The spread of the boll weevil into the area where Sea Island was produced and the nature of the plant and the moisture conditions under which it was grown resulted in drastically reduced yields per acre. Largely as a result of the lower yields, production had declined to about 7,000 bales by 1919 and subsequently to almost nothing. Despite a material increase in the last 2 or 3 years, due in part to light boll-weevil infestation and in part to Federal and State activities designed to stimulate the production of Sea Island cotton, the crop in 1937 amounted to only about 4,000 running bales and during the 7 years ended 1936 averaged less than 200 bales.

At present, Mississippi produces most of the long-staple Upland cotton grown in the United States. During the 7 years 1930-31 to 1936-37, Mississippi produced 60.2 percent of the long-staple Upland cotton produced in this country and almost as large a proportion of the total domestic long-staple production (table 1). During these years the average production in Mississippi was 448,100 running bales. Arkansas is the second largest producer of long-staple cotton, with an average production of 90,600 bales or 12.2 percent of the total United States long-staple Upland production during the 7-year period.

The combined production in the 4 States, South Carolina, California, Louisiana, and Texas, averaged 23 percent of the total long-staple crop with the production in no other single State averaging more than 9,100 bales in the 7-year period. The total production of long-staple Upland for the United States as a whole averaged 744,000 bales during this 7-year period. This constituted about 5.9 percent of the total domestic production of American Upland. Practically all of this long staple Upland is under 1-3/8 inches in staple length and is, therefore, ordinary long-staple.

In contrast to Upland long-staple cotton, American-Egyptian or Pima cotton is all over 1-3/8 inches in staple length, the bulk of it ranging from 1-9/16 to 1-5/8 inches. With the price of this extra long-staple cotton around $1.00 per pound in the early part of 1920 the acreage and production of this cotton jumped to the highest on record. The production that year amounted to about 93,000 bales. But the following year prices declined to less than 40 cents per pound resulting in an acreage decline of 65 percent and a drop in production to 37,000 bales. Since then the production of Pima has never exceeded 33,000 bales and in 1924 was as low as 4,000 bales. (Table 9.) In recent years all of the production of this cotton has been confined to Arizona. During the 7 years 1930-31 to 1936-37 the average production of American-Egyptian was about 14,900 bales. (Table 9.) This, plus the average production of long-staple Upland during the same period (table 1), gives an average domestic production of all long-staple cotton of 758,900 bales which is equivalent to 6.0 percent of the average production of all cotton in the United States during those years.

Mississippi is not only the largest long-staple cotton-producing State, but the production of long-staple cotton represents a larger proportion of the total cotton production for that State than for any other State. (Table 1.) During the 7 years 1930-31 to 1936-37 long-staple cotton averaged about one-third of the quantity and a much larger fraction of the value of the total cotton crop in Mississippi. In Arizona, long-staple production, including both American-Egyptian and Upland, averaged about 21 percent of the total cotton production for the State. In California, long-staple cotton represented 27 percent of the total during the above-mentioned 7 years. In all of the other States long-staple Upland cotton represented 10 percent or less of the total production of all lengths. (Table 1.)

One thing which makes the situation in respect to long-staple cotton particularly significant - despite the fact that the average production of this cotton is only around 6 percent of the total domestic production of cotton - is the fact that most of it is produced in concentrated areas. In Mississippi, which over a 7-year period produced around 60 percent of the total United States production of long-staple cotton, a large part of this cotton is produced in a comparatively small area known as the "Delta". This area is composed of about 12 counties lying between the Mississippi and Yazoo rivers. In these counties a very large proportion of the cotton produced is long staple.

Practically all of the long-staple cotton grown in Arkansas is produced in a comparatively few counties. In Arizona more than three-fourths of the long-staple cotton is produced in Maricopa County and in California practically all of it is produced in five counties. In South Carolina a considerable proportion of the long-staple cotton is produced in and around Darlington County.

Where the production of a given crop is concentrated in a few areas and, as is the case with long-staple cotton in the United States, most of the income of these communities comes from that crop, the importance of the economic situation relative to that crop is somewhat greater than where the same production is more widely distributed. For instance, the welfare of a large proportion of the whole population of the Mississippi Delta is dependent upon the long-staple cotton situation. The banks, stores, and all other service organizations and those dependent upon them for employment are therefore almost as interested in the effects of the duty on long-staple cotton as are the farmers themselves.

As is generally known, Egypt constitutes the chief source of our imports of long-staple cotton. On the average, during the 7 years preceding the enactment of the 1930 Tariff Act, about 92 percent of the imports of all long-staple cotton into the United States came from Egypt. In Egypt there were for a number of years two rather distinct types of cotton, the most important of which was grown, until recently, almost entirely in the upper part of Egypt, and became known throughout the cotton trade as Uppers. The bulk of this cotton is ordinary long-staple cotton or 1-1/8 to 1-11/32 inches in length. The cotton grown in Lower Egypt has for the most part always been of longer staple (mostly extra long-staple 1-3/8 inches and longer) than that grown in Upper Egypt so that for many years there were two contracts for Egyptian cotton on the Alexandria and Liverpool futures markets. On one of these contracts, Sakellaridis and related varieties (produced mostly in Lower Egypt)

are tenderable and on the other Ashmouni, Zagora, and similar varieties (formerly grown largely in Upper Egypt) are tenderable.

In view of the differences in the quality of Sakellaridis and Uppers, the even greater differences between the quality of domestic long-staple Upland and American-Egyptian or Pima cotton, the fact that Egyptian Uppers and American long-staple Upland are in some respects similar in quality and are generally considered as rather directly competitive in certain uses and the fact that Sakellaridis is more nearly similar in quality and more directly competitive with American-Egyptian or Pima than with American long-staple Upland 2/, it was decided that the effects of the tariff could be determined and discussed more satisfactorily by dividing the analyses into two parts.

The first part deals with ordinary long-staple Egyptian cottons referred to throughout this report as Uppers, and with American long-staple Upland. The second part deals primarily with the extra long-staple cottons, Sakellaridis (and other Egyptian cottons similar to Sakellaridis in quality) and American-Egyptian or Pima. Because of its relative unimportance, little attention has been given to the small quantity of long-staple cotton imported from Peru and other countries, other than Egypt.

To determine the exact incidence of the duty on the domestic price (the absolute increase in the domestic price caused by the duty) as it pertains to either ordinary long-staple cotton (Uppers and Upland) or to extra long-staple (Sakellaridis and Pima) it would be necessary to know the extent to which domestic and foreign consumers and producers of these cottons respond to changes in the prices of these cottons when all other factors affecting production and consumption are held constant. If this information were available, formal use could be made of what has been called the equilibrium method 3/ in determining the incidence of a duty on the price of the domestic cotton. The great advantage of this method if it could be applied is that it would give a simultaneous solution of the many interacting forces generated by the imposition of the duty and would aid in avoiding the dangers of circularity and incompleteness of reasoning inherent in any "one-at-a-time" approach to the problem. Unfortunately, much of the basic data needed for the application of this method are not available. For instance, there are no estimates of the domestic production or stocks of American long-staple Upland for the years before 1928 and no estimates for any year of foreign stocks of this cotton or of Egyptian Uppers.

2/ On the question of the extent to which American long-staple Upland and Egyptian Uppers may be substituted for each other, see Some Phases of the Long Staple Cotton Situation in the United States, A. M. Agelasto, W. W. Fetrow, and C. C. Farrington, 1932, U. S. Dept. of Agriculture, p. 2, and Long Staple Cotton, U. S. Tariff Commission, p. 52.

3/ An explanation of the equilibrium method of determining the incidence of a duty as applied to homogeneous commodities is contained in an article entitled "Correct and Incorrect Methods of Determining the Effectiveness of the Tariff" by Henry Schultz, Journal of Farm Economics, Vol. XVII, No. 4, Nov. 1935. This method has been used in the last section of this report to estimate a limit on the possible incidence of the duty on the price of Egyptian Uppers.

In the absence of the data needed for the formal application of the equilibrium method, it has been necessary to use what might be termed "substitute methods". All approaches to the problem are characterized, as to method, by what may be called a search for usably small limiting factors. For instance, one approach, which may be called the premium analysis, shows that the premium of long-staple Upland over American 7/8-inch cotton is itself necessarily an upper limit on the increase in the price of Upland that could have been caused by the duty in the post-duty period. As it happens that this premium was but a minor fraction of the 7-cent-per-pound duty in the 7 seasons since the duty became effective, this upper limit on the price incidence of the duty on American long-staple Upland turns out to be small enough to be very useful. This approach, however, could not be used in the analysis of the effect of the duty on Pima cotton.

Another type of approach used in this report, in analyzing the incidence of the duty on ordinary long-staple as well as on extra-long-staple domestic cotton, was indirect in that it involved an analysis of the effect of the duty on the price, consumption, and production of the imported cotton before the repercussions of these effects on the prices of American long-staple Upland and Pima were studied. This was done because any effect the duty may have had on American ordinary or extra long-staple cotton must necessarily have arisen out of the effect of the duty on the price, production, and consumption of the competitive imported cottons.

In analyzing the effects of the duty, both in the case of ordinary long-staple cotton (Uppers and Upland) and extra long-staple cotton (Sakellaridis and Pima), the first step was the application, to the imported cotton, of the so-called price-differential method of determing the effects of a duty. This method consists of comparing the difference between the domestic and foreign prices of the imported cotton before the duty, with the difference after the duty, to find whether this margin has, or has not, widened by the full amount of the duty. After allowing as far as possible for non-duty factors that might have affected the differential, it is then possible to determine whether the domestic price of the imported cotton has, or has not, been raised relative to the foreign price by the full amount of the duty.

This approach does not reveal, of course, the absolute increase in the domestic price caused by the duty, since even if the differential were increased by the full amount of this duty (as a result of its imposition) it would not follow that the duty had raised the domestic price by the full amount of the duty. This is because the duty, by reducing imports, tends to depress the foreign price of the imported cotton.

The next step was an attempt to estimate the absolute increase in the domestic price of the imported cotton caused by the duty.

Next, an attempt was made to estimate the probable range within which the consumption of Egyptian Uppers and Sakellaridis was decreased by the duty.4/

4/ The effect on domestic instead of foreign consumption was first studied because more information concerning domestic consumption is available. The effect of the duty on consumption was studied before its effect on price because of the larger fluctuations in price and the greater difficulty of accounting for the changes that have occurred.

The effect of the duty on the consumption of the imported cottons was estimated by eliminating the effects of other factors affecting consumption which were unaffected or negligibly affected by the duty. Finally, the effects of changes in the consumption and prices of the imported cottons on the consumption and prices of the competitive domestic cottons were estimated.

EFFECTS OF DUTY ON EGYPTIAN UPPERS AND AMERICAN LONG-STAPLE UPLAND

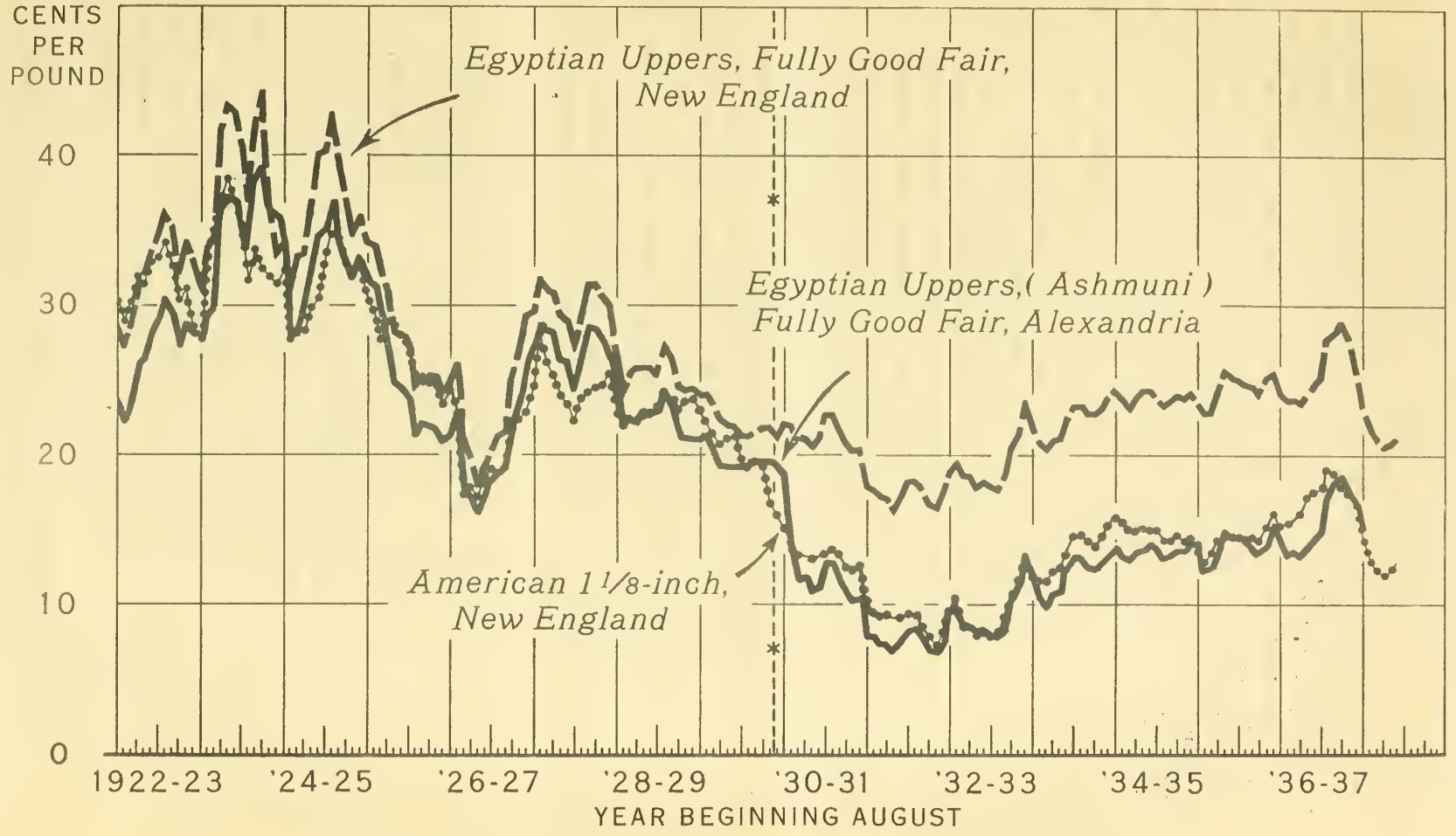
Effects on Egyptian Uppers

Effect on Uppers inter-market price differential.- The price of Egyptian Uppers at New England Mill Points and at Alexandria before and after the imposition of the 7-cent-per-pound duty on long-staple cotton is shown in figure 1. Except possibly for short periods of time, the spread between these two prices would be about equal to the freight, duty, and other costs of delivering the cotton to New England Mill Points from Alexandria if this cotton continued to be imported and if the quoted prices in both markets were adequate as to quality, volume, time, and other factors affecting comparability. This would be true because importers could not long afford to import this cotton and sell it for less than the foreign price plus the costs of delivering it to New England Mill Points and because competition would prevent the importers from being able to charge much more than this amount for any considerable period of time. Under such circumstances it would be expected that prior to the levying of duty the quoted price in New England would exceed the price in Alexandria by the freight and other non-duty costs of importation and that after the imposition of the duty the spread would be wider than before by the amount of the duty if that were the only cost of importation that had changed.

Ocean freight and other non-duty costs of importation are much smaller than the duty and it is therefore safe to conclude that any change in these costs (whether due to changes in ocean freight rates or other costs or due to the effect of the Egyptian currency devaluation of 1931 on the dollar statement of these costs) that may have occurred since the duty went into effect would be very small compared with the duty. Any change that may have taken place since the duty went into effect would probably be a reduction because the worldwide depression reduced the freight, interest, and probably some of the other non-duty costs of getting this cotton from Alexandria to New England Mill Points.

The principal factors other than non-duty costs of importation that might tend to prevent the spread between the price of Egyptian Uppers in New England and the price in Alexandria from widening by exactly the amount of the duty following the imposition of the duty are as follows: The price quoted in one or both of the markets might not be representative of the actual prices at which Egyptian Uppers is traded in these markets. At times domestic prices of Uppers have been more or less nominal due to the absence of actual transactions. The relative quality of Uppers quoted in the two markets might on the average have changed somewhat after the imposition of the duty. Finally, as it takes a considerable length of time to ship cotton from Alexandria to the United States the two current prices might, over short periods of time, differ by an amount other than the total current costs of importation.

COTTON: PRICES OF EGYPTIAN UPPERS AND AMERICAN 1 1/8-INCH AT NEW ENGLAND MILL POINTS, AND PRICE OF EGYPTIAN UPPERS AT ALEXANDRIA, 1922 TO DATE



*TARIFF OF 7 CENTS PER POUND BECAME EFFECTIVE JUNE 18, 1930

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FIGURE 1

An examination of the prices plotted in figure 1 shows that in the 94 months from August 1922 through May 1930, during which period all cotton was on the free list except 1-3/8 inch and longer which was dutiable during August and most of September 1928, the price of Fully Good Fair, Egyptian Uppers, in New England averaged 3.4 cents per pound higher than in Alexandria. Imports of Egyptian Uppers continued, though at reduced volumes, after the imposition of the 7-cent duty in June 1930. (Table 2.) If there had been no change in any other factor affecting the inter-market price spread, the differential should have averaged 7 cents more than before the duty, or 10.4 cents per pound. If the first 3 months following the imposition of the duty are omitted to allow for the lag in the adjustment in the price spread that was made possible by the reduction in domestic stocks, the inter-market price spread actually averaged 10.1 cents per pound in the 82 months, October 1, 1930-July 31, 1937, since the duty was enacted. In other words, the inter-market price spread has widened about 6.7 cents per pound, or by an amount slightly less than the duty. The failure of the actual spread to widen by more nearly the exact amount of the 7-cent duty was believed to have been due to changes in the other mentioned factors affecting the spread. Consequently, it is believed that the 7-cent duty caused the spread between the United States and foreign price of a given quality of Uppers to have averaged very nearly 7 cents per pound greater during the 7 post-duty years than would have been the case without the duty.

Effect of duty on price of Egyptian Uppers.- The increase in the inter-market price spread caused by the duty is only of incidental interest in analyzing the effect of the duty. Insofar as the price effect is concerned, the really important thing is to determine the incidence of the duty, that is, the extent to which the United States price was increased and the foreign price was decreased by the duty. In other words, the increase in the spread between the two markets may have been brought about not only by raising the domestic price above what it would have been without the duty but also, in part, by a lowering of the foreign price.

It is believed that most of the absolute effect or incidence of the 7-cent duty, as far as the price of Egyptian Uppers is concerned, took the form of an increase in the United States price of Egyptian Uppers and that only a minor fraction took the form of a reduction in the foreign price. The incidence of any duty is determined by the relative size of the domestic and foreign market for the commodity and by differences in the degree to which domestic and foreign consumers and producers react to changes in the price of the product.5/ The relative size of the domestic and foreign markets is especially significant in estimating the price incidence of the duty in cases, such as the present one, in which the difference in size is very great. In the 7 post-duty years the United States imports of Uppers were only about 3.3 percent of estimated foreign consumption of Uppers. 6/ On the assumption that a given percentage change in price will cause about the same percentage change in consumption and production in this market as in the foreign market, the fact that the estimated foreign

5/ See pages 6 and 49.

6/ Using for foreign consumption the production less United States imports. (Table 2.)

consumption is about 30 times as large as the United States consumption (as represented by imports) would indicate that the duty probably raised the domestic price of Uppers much more than it lowered the foreign price. This is because if the foreign consumption is 30 times as large as our imports, the decrease in United States imports caused by the duty will be one-thirtieth as large a percentage of foreign consumption as it will be of imports.

This tendency of the difference in the size of the markets to throw the price incidence of the duty on the domestic price is, if anything, probably augmented rather than reduced by the relationships existing between the degree to which domestic and foreign producers and consumers react to changes in the price of Uppers. It is believed that foreign consumption of Egyptian Uppers would change by a larger percentage than would domestic consumption as a result of a given percentage change in price 7/ and certainly the foreign production of Uppers is more responsive to price changes than is the domestic production since none is produced in this country. These relationships between the domestic and foreign elasticities of demand and supply would tend to supplement rather than offset the relative smallness of the United States market in placing most of the incidence of the duty on the United States price of Egyptian Uppers.

The conclusion that "most" of the price effect of the duty on Uppers took the form of an increase in the domestic price of Uppers rather than the form of a decrease in the foreign price, would seem to be sufficiently supported by the facts of the great difference in the size of the markets, by the fact that the foreign supply of Uppers is necessarily more elastic than the domestic supply of Uppers, and by an assumption based on general reasoning that the foreign demand is probably more elastic than the domestic demand. A more technical analysis giving proper weights to these facts and assumptions is required as a basis for any attempt to set a limit on what the word "most" means. This is presented in the last section of the report and indicates that it seems conservative to estimate that, in the post-duty period, the New England price of Egyptian Uppers averaged at least 6-3/4 cents higher and the Alexandria price less than 1/4 cent lower, than would have been the case in the absence of the duty.

Effect of the duty on domestic consumption of Egyptian Uppers.- It was stated above that in order to estimate the effect of the duty on the price of American long-staple it would be necessary first to study its effect on Egyptian Uppers since any effect the duty might have on the domestic cotton would necessarily arise out of its effects on the imported cotton. It was found in the preceding section that the duty probably raised the domestic price and lowered the foreign price of Uppers relative to what they would have been without the duty. The effect of changes in the price of Egyptian Uppers on the price of American long-staple Upland is dependent upon the effect of the changes in Uppers price on the consumption of American long-staple Upland. The increase in the United States price of Egyptian Uppers resulting from the duty undoubtedly caused the domestic consumption of American long-staple Upland to be larger than it would otherwise have been. 8/ But the decrease in the foreign price of Uppers

7/ See page 45.
8/ See the decrease in the ratio of Uppers to total cotton and the increase in the ratio of American long-staple Upland to total cotton used in tires (table 4) and thread (table 6).

caused by the duty, had the opposite effect on the foreign consumption of the American cotton and to determine the effect on the price of the American long-staple of these opposite changes in consumption it is necessary to estimate the net change in world consumption of American Upland caused indirectly by the duty.

But as the domestic consumption of Egyptian Uppers is largely confined to a single industry, whereas that of American Upland is not so highly concentrated, more information is available concerning factors affecting the domestic consumption of Egyptian Uppers than is available that relates to the domestic consumption of American Upland. For this reason the effect of the duty on the domestic and foreign consumption of Uppers is first estimated and from this, inferences are drawn concerning the indirect effect of the duty on the world consumption and price of Upland rather than attempting to estimate directly the effect on American long-staple Upland consumption and price of the changes in Uppers prices caused by the duty.

The Tariff Commission estimates 9/ that in 1932, 92.4 percent of the Egyptian Uppers cotton consumed in the United States was used in the production of tire fabric, 5.3 percent in thread, and 2.3 percent in fine goods and other products. Therefore, in that year the tire and thread industries consumed almost 98 percent of the Uppers cotton. Though conditions before and after 1932 were undoubtedly different, it is believed that changes in the consumption of Uppers in tires and thread may reasonably be taken as representative of changes in the total consumption of Uppers in the United States.

Based on calendar year data it is estimated that the total raw cotton content of tire fabric consumed in the United States in the two seasons beginning August 1, 1928 averaged 640,000 bales (table 3). Similarly it is estimated that in the 7 post-duty years beginning August 1, 1930, the raw cotton content of tire fabric consumed averaged only 491,000 bales, a decline of 149,000 bales.

The duty on long-staple cotton cannot be held responsible for any significant fraction of the decline in the total cotton used in tires. It could only affect this total in two ways, neither of which seems likely to have occurred to an appreciable extent. The duty, by raising the price of that portion of the cotton used in tires which is long-staple, might have caused less cotton to be used per average tire. Secondly, the increase in the price of long-staple cotton caused by the duty might have had no effect on the cotton content per average tire but, by raising the price of tires, might have reduced the number of tires consumed.

It seems improbable that the 7-cent-per-pound duty is accountable for any important part of the 149,000-bale reduction in the use of cotton in tires as far as its effect on the cotton content of the average tire is concerned. In 1928 only 30 percent of the cotton used in tires was 1-1/8 inches and longer (table 4). Assuming this percentage remained about the same up to the time of the imposition of the duty, only 30 percent of the cotton used in tires could have been significantly affected by the duty. Of this 30 percent, almost a third or 8-1/2 percent of the total was American long-staple Upland, the price of which another analysis, independent of this one 10/, will show could not

9/ Long-Staple Cotton, U. S. Tariff Commission, 1935, p. 55.
10/ See figure 2 and pages 22 to 25.

have been increased by the duty more than 1.8 cents per pound in the post-duty period. Even assuming the price of this cotton was raised by this maximum amount, the increase would have been **only** about 18.3 percent of the price which under this assumption would have existed for this cotton in the 7-year post-duty period had there been no duty. The other 21-1/2 percent of long-staple cotton was mainly Egyptian Uppers and on this, the 7-cent duty, if it had raised the domestic price by the total amount of the duty, would have raised it about 46.8 percent of the average post-duty price that would have existed under this assumption in the absence of the duty. Both the 18.3 and the 46.8 percent are the maximum rather than the probable effects of the duty on the prices. Thus, the price of 70 percent of the total cotton used in tires was unaffected by the duty; the price of 8-1/2 percent was raised less than 18.3 percent; and the price of 21-1/2 percent was raised less than 46.8 percent.

Combining these figures indicates that the duty raised the cost of cotton in the average tire less than 11.6 percent. It is believed that even this maximum increase in the cost of cotton used in tires would not significantly affect the cotton content of the average tire. Changes in the average cotton content per tire are believed to occur only with the discovery of substitutes for cotton or of improved methods of tire design and manufacture. An abnormally high price for cotton, if maintained over a long period, might affect manufacturing practices in this respect. But it is believed that the rate of technological development in the tire industry has been but slightly affected by any change in the price of cotton 11/ that might have resulted from the 7-cent duty.

Neither is it believed that the duty had any significant effect on the domestic consumption of cotton in the tire industry through its effect on the consumption of tires. This conclusion is based on the assumption that even if the duty had raised the price of the cotton used in producing tires as much as 11.6 percent, the resulting increase in the cost of a tire would have been so small as to have had a negligible effect on the number of tires consumed, and therefore a negligible effect on the consumption of cotton in tires. The reasonableness of this assumption is indicated by the two following paragraphs:

It is estimated that on the average, during the 7 post-duty years, 1930-36, most of the imported cotton over 1-1/8 inches in staple length was used in the production of truck and bus tires 12/. It is also estimated that most of

11/ Cotton Used in Tire Fabrics, R. J. Cheatham and A. M. DuPré, U. S. Dept. of Agriculture, 1937, p. 15. (Mimeographed.)

12/ "The principal use of the 165,000 bales of Uppers at present (1929) is in tire cloth for the better quality automobile tires, particularly such as are used on busses and airplanes." (Tariff Readjustment, 1929, Hearings before the Committee on Ways and Means, 70th Congress, 2d session, p. 8473. Testimony of H. F. Lippett, representing Cotton Manufacturers' Assn.). "The cord fabric of most passenger car tires is made from cotton of 1 inch to 1-1/16 inches in length, while cotton 1-3/32 inches and longer goes mostly into tires for trucks and busses, although there is some overlapping in the case of light truck and extra-quality passenger car tires." (Cotton Used in Tire Fabric, R. J.Cheatham and A. M. DuPré, U. S. Dept. of Agriculture, 1937, p. 16). "These cottons (foreigh growths and Pima) are now used principally in the cord fabric of heavy-duty, high-speed truck and bus tires and in some of the most expensive passenger car tires." (Previous source, p. 6.)

the cotton in the average truck and bus tire was 1-1/8 inches or longer during this period 13/. Finally it is estimated that but a small percentage of the cotton in the average passenger car tire is long-staple. For these reasons, it is safe to assume that if it can be shown that the duty had practically no effect on the consumption and production of truck and bus tires where most of the cotton used is long-staple it would necessarily follow that the duty had even less effect on the consumption of passenger-car tires. Therefore, the effect of the duty on the consumption of truck and bus tires will be analyzed before conclusions are reached concerning its effect on the production of all tires.

It is estimated that in the 7 post-duty years the average truck and bus tire contained around 10 pounds of raw cotton 1-1/8 inches or more in length 14/. It is not known what percentage of this cotton was American or foreign cotton. But even assuming the 7-cent duty raised the price of both the domestic and imported long-staple cotton in a truck and bus tire 7 cents per pound the increase in the cost of raw cotton used in the average truck and bus tire due to the duty would have been about 70 cents. This 70 cents may be compared with an estimated post-duty average retail price of truck and bus tires of about $21 15/. The 70 cents is only 3.3 percent of the average retail price of $21. Furthermore, truck tires go into consumption as one of several joint expenses incurred in producing truck transportation. The 70 cents, therefore, should be compared with total truck operating costs rather than to the cost of the tire only. Tire and other operating costs will vary, of course, with the size of the truck, the type of operation, and other factors.

Cost studies of large commercial fleets, as published in trade journals, indicate that tire cost as a percent of operating and maintenance costs including drivers' wages, range from as low as 5-1/2 percent in the case of 1/4 and 1/2-ton pick-up trucks to as high as 11.6 percent in the case of 6-wheel,

13/ "Many tire manufacturers believe that Egyptian cottons are necessary to give the required fabric strength for bus and large truck tires. This opinion, although held by the majority, does not appear to be universal." (Long Staple Cotton, U. S. Tariff Commission Report No. 85, Second Series, 1935, p. 60).

14/ This estimate excludes those very small trucks which use 6.00x16 and 6.50x16 tires - such tires as are used principally on passenger cars. Unpublished data on the production of each passenger-car tire of given size and number of plies (including the 6.00x16 and the 6.50x16) and on the weight of the fabric in each kind of tire were combined to obtain total fabric in passenger car tires. This was raised to equivalent raw cotton by allowing 14 percent for waste in manufacture. Total raw cotton in passenger-car tires was deducted from total raw cotton in all tires (table 3) to derive total cotton in truck and bus tires. It was assumed on the basis of material in footnotes 12 and 13, and supplementary qualitative information, that 90 percent of this was long-staple cotton.

15/ Retail prices of truck and bus tires of given size and number of plies as published in catalogues of large mail order houses were weighted by unpublished information concerning the number of each size tire produced. The 1935 Census of Manufactures reported the average wholesale value per truck and bus pneumatic casing as $16.63.

10-tire, 10-ton trucks. The basis of the above percentages excluded depreciation, taxes, licenses, and other fixed charges. If fixed charges could be included, these percentages would be even smaller. With tire cost less than from 5-1/2 to 11.6 percent of the total cost of producing truck and bus transportation, an increase in tire cost of 3.3 percent, as a result of the duty, would constitute an increase in the costs of operating a truck of less than from 2/10 to 4/10 of 1 percent. The effect of such an increase in costs, even if it could be reflected in rates, would have a negligible effect on the use of truck transportation by shippers and, therefore, it is concluded that the duty must have had a negligible effect on the consumption of cotton in the tire industry as far as its effect on the total consumption of truck and bus tires is concerned. As it would have had an even smaller effect on the consumption of the average passenger-car tire and as it is estimated that passenger-car tires used from 70 to 80 percent of all cotton used in tires, 16/ it is concluded that the duty had very little effect on the total consumption of cotton in the tire industry. 17/ Therefore, it is concluded that practically none of the previously mentioned decrease of 149,000 bales in the consumption of cotton in tire fabric that occurred after the duty went into effect was due to the duty.

The thread industry uses practically no short-staple cotton and is the only other section of the domestic textile industry that uses an appreciable quantity of Egyptian Uppers or other imported ordinary long-staple cotton. As may be seen in table 5, the consumption of total cotton in the thread industry has averaged 81,900 bales in the 3 census years since the duty went into effect or slightly more than the 75,500 bales used in 1929. As in the case of tire production, it is believed that the production of thread would have shown practically the same change if there had been no duty on long-staple cotton.

The demand for long-staple cotton for use in thread is derived from the demand for thread which, in turn, is derived from the demand for clothing and other consumers' goods in which thread is used. Even if all cotton used in thread were imported long-staple cotton, which is not the case (table 6), and even if the domestic price of imported long-staple were raised by the full amount of the duty or 7 cents per pound, this would result in an increase of only about 10 cents in the cost of producing 1 pound of thread. This 10 cents may be compared with the average wholesale price of thread of $1.20 per pound during the 3 post-duty census years of 1931 to 1935. This would be a very small fraction of 1 percent of the price of most garments in which thread is used. It is believed that this small increase in the cost of a pound of thread and much smaller increase in the price of clothing would have a negligible effect on the consumption of the clothing in which thread is used. Therefore, it is concluded that the increase that has occurred in the production of thread would not have been much greater if there had been no duty on long-staple cotton.

16/ Based on estimates described in footnote 14 and table 3.

17/ This does not imply that the duty did not reduce the use of imported long-staple cotton in the tire industry. The contrary is the case, of course, as indicated by the decrease in Uppers consumption in tires in table 4. The argument does imply that the decrease in the use of Uppers caused by the duty was about offset by an increase in the use of domestic cotton, especially long-staple, and that therefore the duty had little effect on total consumption of cotton in tires.

On the basis of the above it is estimated that the total raw cotton content of tires and thread, the two principal domestic outlets for Egyptian Uppers, fell from an estimated average of 715,500 bales in the 2 seasons preceding the duty to an average of 572,900 bales in the 7 seasons following the duty, a decline of 142,600 bales, or about 20 percent (tables 3 and 5). Furthermore it is estimated that practically all of this decline in the total raw cotton content of tires and thread would have occurred even if the duty on long-staple cotton had not been enacted.

If tires and thread were the only products in which Egyptian Uppers cotton was used in this country and if there had been no change in the ratio of Egyptian Uppers to total cotton used in tires and thread then the total domestic consumption of Egyptian Uppers would necessarily have decreased by 20 percent or the same percentage that total cotton used in tires and thread decreased. A 20-percent decline in the consumption of Uppers in this country would have been equivalent to about 26,200 bales (table 2). Actually the domestic consumption of Uppers decreased about 86,900 bales (from 130,800 to 43,900 bales, table 2). There is a possibility that the actual decrease was slightly larger than this because of a probable overstatement of 1931-32 disappearance of Uppers. 18/ However, this error in 1 year probably could not cause an error in the 7-year average of more than 5,000 bales. The actual decrease exceeded the estimated proportionate decrease by 60,700 bales, which represents the approximate net effect of the duty and all other factors that tended to change the ratio of Egyptian Uppers to total cotton consumed in tires and thread.

That the ratio of Uppers to total cotton used in these industries did decrease after the imposition of the duty is indicated by estimates by the Tariff Commission that, in 1929, Uppers cotton constituted about 15 percent and in 1933, 0.5 percent of cotton used in thread (table 6). In 1928, Uppers and Sakellaridis combined constituted about 21 percent and in 1935-36 less than 4 percent of all cotton used in tires (table 4).

Factors that tended to change the consumption of Uppers by changing the ratio of Uppers to total cotton used in tires and thread may be spoken of as "Uppers ratio-changing factors". Uppers ratio-changing factors may be subdivided into three subclasses: (a) The duty, which is an Uppers ratio-decreasing factor, (b) Non-duty Uppers ratio-decreasing factors, and (c) Uppers ratio-increasing factors. The decrease of 60,700 bales represents the approximate net effect of all 3 of these 3 sets of factors on the consumption of Uppers in this country. Finally, the effect on Uppers consumption of factors that tended to change the total consumption of cotton in tires and thread without changing the ratio of Uppers to other cotton is represented

18/ The 1931-32 disappearance of Uppers in table 2 is 66,300 bales, based on imports of 54,300 bales. Deducting these imports from imports of total Egyptian cotton leaves so small an import of Sakellaridis as to cause calculated 1931-32 disappearance of Sakellaridis to appear too small in view of the usual requirements of Sakellaridis in the thread industry. Therefore, the 1931-32 imports and disappearance of Uppers is believed to be too large. See Long-Staple Cotton, the U. S. Tariff Commission, table 16, p. 54, footnote 3.

approximately by the 26,200 bales. These factors may be spoken of as "non-ratio-changing factors". The interrelationships of these sets of factors are brought out in the following tabulation:

	Approximate no. of bales
I. Estimated effect of non-ratio-changing factors	(-) 26,200
II. Estimated effect of Uppers ratio-changing factors:	
A. Effect of the duty, an Uppers ratio-decreasing factor ..... (-) -?	
B. Effect of non-duty Uppers ratio-decreasing factors ..... (-) -?	
C. Effect of Uppers ratio-increasing factors .... (+) -?	
Estimated net effect of all Uppers ratio-changing factors	(-) 60,700
III. Actual decrease in Uppers consumption	(-) 86,900

Obviously, if it could be shown that there were no factors that tended to increase the ratio of Uppers to other cotton in tires and thread during the period (Class II-C factors) or, failing this, if it could be shown that the effect of these was not larger than that of non-duty Uppers ratio-decreasing factors (Class II-B factors), it could be concluded that the duty could not have been responsible for a decrease in Uppers consumption of significantly more than 60,700 bales. On the other hand, if Class II-C factors exerted more influence on Uppers consumption during the period than Class II-B factors, then it would be concluded that the duty must have had a greater depressing effect on Uppers consumption than the 60,700 bales.

It is known that non-duty Uppers ratio-changing factors were operating during the period, some of which tended to increase the proportion of Uppers and some of which tended to decrease the ratio. In the tire industry both ratio-increasing and the ratio-decreasing factors were operating.

In the tire industry certain trends were apparent long before 1930 which affected the ratio of Uppers to other cotton in tires. Following the introduction of the low-pressure or balloon tire, about 1922, there was a sharp decline in the production of high-pressure tires. By 1928, only about 28 percent of all passenger-car tires were of the high-pressure type and by 1936 only 1.5 percent were high-pressure tires. As the balloon tire operated at a much lower pressure than the high pressure tire, it required less strength in the cord fabric and, therefore, could use shorter staple cotton. 19/

This shift into balloon tires was undoubtedly an important ratio-decreasing factor, at least for a number of years after 1922, and is believed to have been a fairly important factor after the imposition of the duty in 1930. The better riding qualities, together with the greater serviceability of the

19/ For a more extended discussion, see Cotton Used in Tire Fabrics, by R. J. Cheatham and A. M. DuPre, U. S. Dept. of Agriculture, p. 4. (Mimeographed)

newer balloon tires, suggest that the shift to balloon tires and the use therein of shorter staple cotton were probably influenced to a very small extent by variations in the relative prices of long staples over short staples. It is believed, therefore, that this trend and the technological developments responsible therefor would have resulted in a substantial decline in the proportion of Uppers cotton used in tires after 1930, even if there had been no duty on this cotton. This seems likely to have been true even though prior to 1930 there had already been a significant shift from longer to shorter staple cottons in high-pressure passenger-car tires.

There was also an important trend during this period in the proportion of bus and truck tires that were of low-pressure. But this was probably not very significant in reducing the ratio of Uppers to total cotton used in the production of bus and truck tires for it is estimated that in most of these tires about 90 percent of the cotton used is long staple and only about 10 percent shorter than 1-1/8 inches. In fact, it is quite possible that this shift toward balloon bus and truck tires may have tended to increase the ratio of Uppers cotton to total cotton in bus and truck tires. This is possible in that it may have caused a shift from cotton 1-3/8 inches and longer in staple to Uppers.

Another trend in the tire industry, not due to the duty, which probably was an Uppers ratio-increasing factor during the period, was the increase in the ratio of the number of truck tires to the total number of tires produced. This tended to increase the ratio of Uppers to total cotton used in all tires because the proportion of long-staple to total cotton used in truck and bus tires was, and is, much higher than in passenger-car tires. Truck and bus tires constituted an estimated 8.6 percent of all tires produced in the two seasons preceding the duty and 11.4 percent in the 7 post-duty years, an increase in the ratio of 32.6 percent (table 3). On a cotton-content basis, however, the ratio probably increased somewhat less because between these periods the average cotton content per average truck tire was probably decreasing because the ratio of the smaller truck tires to total truck tires produced declined somewhat. Data on the number of plies per average truck tire of each size produced are not available, but if this remained about the same the decrease in the percentage of the smaller truck tires produced would indicate a decrease in the average cotton content per truck tire.

Since practically no short-staple cotton is used in thread, the only way in which any factor -- duty or otherwise -- could have significantly affected the ratio of Uppers to total cotton in the thread industry would have been by changing the ratio of Uppers to other cotton 1-1/8 inches and longer in staple length used in that industry. This ratio decreased markedly after the duty was imposed. According to estimates made by the United States Tariff Commission, 20/ Uppers constituted 14.7 percent of all cotton 1-1/8 inches and over used in thread in 1929, 2.8 percent in 1932, and 0.5 percent in the first 9 months of 1933 (table 6). Apparently domestic long-staple Upland was the cotton which was substituted since that was the only other cotton used in thread which became a larger percent of the total. Insofar as is known, there were no important factors other than the duty that would have caused any significant changes in the ratio of Uppers to other cotton

20/ Long Staple Cotton, 1935, p. 57.

in thread. This and the material increase in the spread between the price of Uppers and American 1-1/8-inch cotton in domestic markets after the imposition of the duty have resulted in the assumption that the duty was the principal factor affecting the ratio of Uppers to total cotton in the thread industry and that other factors were probably unimportant.

The depression probably also was an Uppers ratio-decreasing factor. With the recession of consumers' incomes, the proportion of that income spent on certain items in the budget would increase and the proportion spent on other items would decrease. There is very little doubt that the depression curtailed the consumption of certain classes of goods more than the consumption of others. It seems reasonable to suppose that this probably caused a greater decline in the demand in the United States for the higher-priced Uppers cotton than for total cotton. The marked increase in the production and consumption of rayon in the United States since 1928 and 1929 has also probably had more effect on the demand for long-staple than for short-staple cotton, and was, therefore, probably a ratio-decreasing factor.

The limited amount of data available tends to indicate that the average world production of ordinary long-staple cotton showed a slightly larger percentage increase in the 6 years following August 1, 1930, compared with the 2 preceding years, than did the world production of short staple. If this were actually the case, it constituted a ratio-decreasing factor. Since general business conditions in foreign countries apparently averaged lower in the post-duty years than in the 2 years ended 1929-30, this probably tended to cause Uppers cotton to average lower relative to shorter staple cotton (which constitutes the bulk of the cotton consumed in the United States) in the post-duty period than in the earlier period. If so, then this tended to increase the United States consumption of Uppers relative to other cotton and constituted a ratio-increasing factor. The marked increase in the production and consumption of rayon in foreign countries also may have tended to depress the price of Uppers more than the average price of all cotton and consequently to have caused the ratio of the United States consumption of Uppers to total cotton to increase.

It is very difficult if not impossible to determine from available data the exact net effect of these non-duty factors on the ratio of Egyptian Uppers to total cotton consumed in the United States in the production of tires and thread. However, such limited information concerning the relative importance of these non-duty factors as is available makes it seem reasonable to believe that the ratio-decreasing (class II-D) factors were fully as important as the ratio-increasing (class II-C) factors. If this is true, then 60,700 bales would be the approximate maximum effect of the duty alone on the domestic consumption of Egyptian Uppers.

In this connection it is significant that the analysis contained in the last section of this report indicates that in order for the duty to have reduced the domestic consumption of Uppers by as much as 60,700 bales the ratio of the change in the United States price to the change in the United States consumption of Uppers would be at least 2.6. This is about 8 to 10 times as large as certain studies indicate this ratio for all cotton to be. 21/

21/ See page 43 and footnote 38 .

Effect of duty on world consumption of Egyptian Uppers.- It is believed that the effect of the duty on the total world consumption of Egyptian Uppers is more significant in a study of the effect of the duty on the price of American long-staple Upland cotton than a knowledge of its effect on only the United States consumption of Egyptian Uppers. This is because until the last 3 years from 20 to 40 percent of the production of American long-staple Upland cotton was exported (table 7). Though the duty probably decreased the United States consumption of Egyptian Uppers by something like 60,700 bales or less, it must have caused an increase in the foreign consumption of Uppers because the duty tended to depress the foreign price and because there is at least some response to price changes by foreign consumers. It is believed, however, that that increase was not so great as the decrease in the consumption of this country and that, therefore, the duty tended to decrease the total world consumption of Uppers. 22/ The decrease in the United States consumption of Uppers caused by the duty necessarily resulted in about an equal decrease in the imports of Uppers. This reduction in American imports tended to depress the foreign price of Uppers at least slightly.

The fall in the foreign price thus caused by the duty would not only tend to increase the foreign consumption but would tend to decrease the production of Egyptian Uppers, since it is not reasonable to assume that foreign producers are entirely unresponsive to price changes. 23/ As no cotton exactly similar to Egyptian Uppers cotton is produced in the United States where the higher price caused by the duty would tend to stimulate its production, it follows that the duty tended to reduce total world production of Uppers. But a decrease in production of Egyptian Uppers must, except insofar as stocks can be drawn upon to make up the difference, be accompanied by a decrease in the world consumption of Uppers. For these reasons it is believed that the duty decreased the world consumption of Egyptian Uppers below what it would have been without the duty.

As just indicated, the duty no doubt decreased the world consumption of Uppers. However, it is probable that that decrease was a good deal less than the decrease in the United States consumption of Uppers caused by the duty. The great difference in the size of the two markets supports the conclusion that the duty did not decrease world consumption nearly so much as it reduced the United States consumption of Uppers. In view of the fact that the estimated foreign consumption of Egyptian Uppers was about 30 times as great as the United States imports of this cotton in the post-duty period, the same percentage change in the price of Uppers in both markets resulting from the removal of the duty would (under the assumption that demand had the same elasticity in both markets) tend to result in an increase in foreign consumption of about 30 times as many bales as the decrease in United States imports and consumption. It is believed that if any difference exists, the foreign demand is

22/ The actual world consumption was larger in the post-duty period than before the duty. The point it is desired to make is that if it had not been for the duty the increase in the world consumption would have been larger than it actually was.

23/ The actual production of Egyptian Uppers was larger after the duty than before, but it is believed that if there had been no duty it would have increased more than it did.

more elastic than the domestic demand. 24/ This difference would tend to make the percentage increase in the foreign consumption larger than the percentage decrease in the domestic consumption resulting from the same percentage price changes in both markets.

These considerations suggest that it would be very conservative to estimate that at least half of the indicated decrease in the United States consumption caused by the duty (estimated at about 60,700 bales or less) was offset by increased foreign consumption even though, as indicated above, the duty probably depressed the foreign price of Uppers much less than it increased the New England price.

Effects on American Long-Staple Upland

Effects indicated by change in Uppers price and consumption caused by duty.- It has been shown in the preceding section that the duty on long-staple cotton caused a considerable shift in the consumption of both Egyptian Uppers and American long-staple Upland. It was shown that in the United States the consumption of Uppers was considerably smaller and the consumption of long-staple Upland considerably larger in the 7 post-duty years than would have been the case without the duty, while in foreign countries the duty probably increased the consumption of Uppers and decreased that of long-staple Upland. It was also indicated that in all probability the decrease in United States consumption of Uppers due to the duty was greater than the increase in foreign countries and that consequently the duty caused some decline in the world consumption and production of Egyptian Uppers.

As the duty probably resulted in a decrease in the world consumption of Egyptian Uppers, it is believed that this in turn increased the world consumption of American long-staple Upland. In view of the probable shift in the world consumption from Egyptian Uppers to long-staple American Upland, the duty probably caused some increase in the price and production of the latter. In fact, except for changes in stocks, the world consumption of American long-staple Upland could only be increased by the duty through an increase in production and this in turn could be brought about by the duty only through increasing the price of this cotton.

It does not follow, however, that a decrease in the world consumption of Uppers (which as indicated above is conservatively estimated at half or less than half of the maximum of 60,700 bales) would cause an equal increase in the world consumption of American long-staple Upland. The increase in Upland consumption would probably be much less than the decrease in Uppers consumption. In the first place, though American long-staple cotton is the most direct competitor with Egyptian Uppers and would, therefore, doubtless be the main beneficiary of any decrease in the world consumption of Uppers brought about by the duty, nevertheless there probably was some slight increase in the world consumption of cotton 1-1/16 inches in staple. In the second place, it is probable that at least part of the decline in Uppers consumption might result in a net decline in world consumption of all cotton. In other words, a part of the decline might not be offset by an increase in any other cotton.

24/ Pages 45 and 46.

These two considerations seem to justify the assumption that the decrease in the world consumption of Egyptian Uppers of about 30,000 bales or less resulting from the duty would be associated with an increase in the world consumption of American long-staple of not more than 15,000 bales.

Though the duty, by decreasing the world consumption of Egyptian Uppers, may indirectly have increased the world consumption of American long-staple Upland, it is probable that the associated increase in the price of American long-staple Upland must have been only a small fraction of the 7-cent-per-pound duty. This is because the estimated increase in the world consumption of American long-staple Upland caused by the duty is relatively small compared with the production of this cotton. If the world consumption, and therefore the world production of American long-staple, had been increased by as much as 15,000 bales this would have been equivalent to an increase of only 2 percent of the average production of American long-staple Upland in the 7-post-duty years.

It is not possible to determine the exact increase in the price of American long-staple Upland that is ordinarily required to induce growers to increase production 2 percent. This depends upon the responsiveness of growers to changes in the price of this cotton. But even if the producers of this cotton are so unresponsive to charges in its price that an increase in its production of 2 percent could only be brought about by raising the price twice that percentage, this would have meant that the average post-duty domestic price of Middling 1-1/8 inch cotton, of 11.61 cents per pound, 25/ would have been raised by the duty only by a little less than 0.5 cent per pound. The same percentage increases in the 7-year average price of Middling 1-3/16 inch cotton at Memphis would have been equivalent to slightly over 0.5 cent per pound. However, it is not probable that the duty raised the price of 1-3/16 inch American Upland any more than, and may have raised it less than, that of 1-1/8 inch cotton, as most of the Uppers cotton is more nearly similar in quality to, and therefore probably more directly competitive with, 1-1/8 inch American than 1-3/16 inch American.

The analysis to this point leads to the conclusion that the price benefit to American long-staple that resulted from the duty was probably less than 1/2 cent per pound. Throughout the analysis all doubtful decisions have been made in such a way as to give what seemed to be a very liberal estimate of the possible price effect of the duty.

Effects on American long-staple indicated by an analysis of premiums.- If it could be shown that the duty on long-staple cotton did not tend to raise the price of American short-staple cotton and that, in the absence of the duty, long-staple cotton would not sell for less than short-staple cotton, then it would necessarily follow that any premium on long-staple that might exist after the duty took effect would represent the maximum amount the duty could have raised the price of long-staple in that period above what it would have been without the duty.

25/ The average price of American 1-1/8 inch cotton at Memphis in the 7 seasons beginning August 1, 1930. (Table 7.)

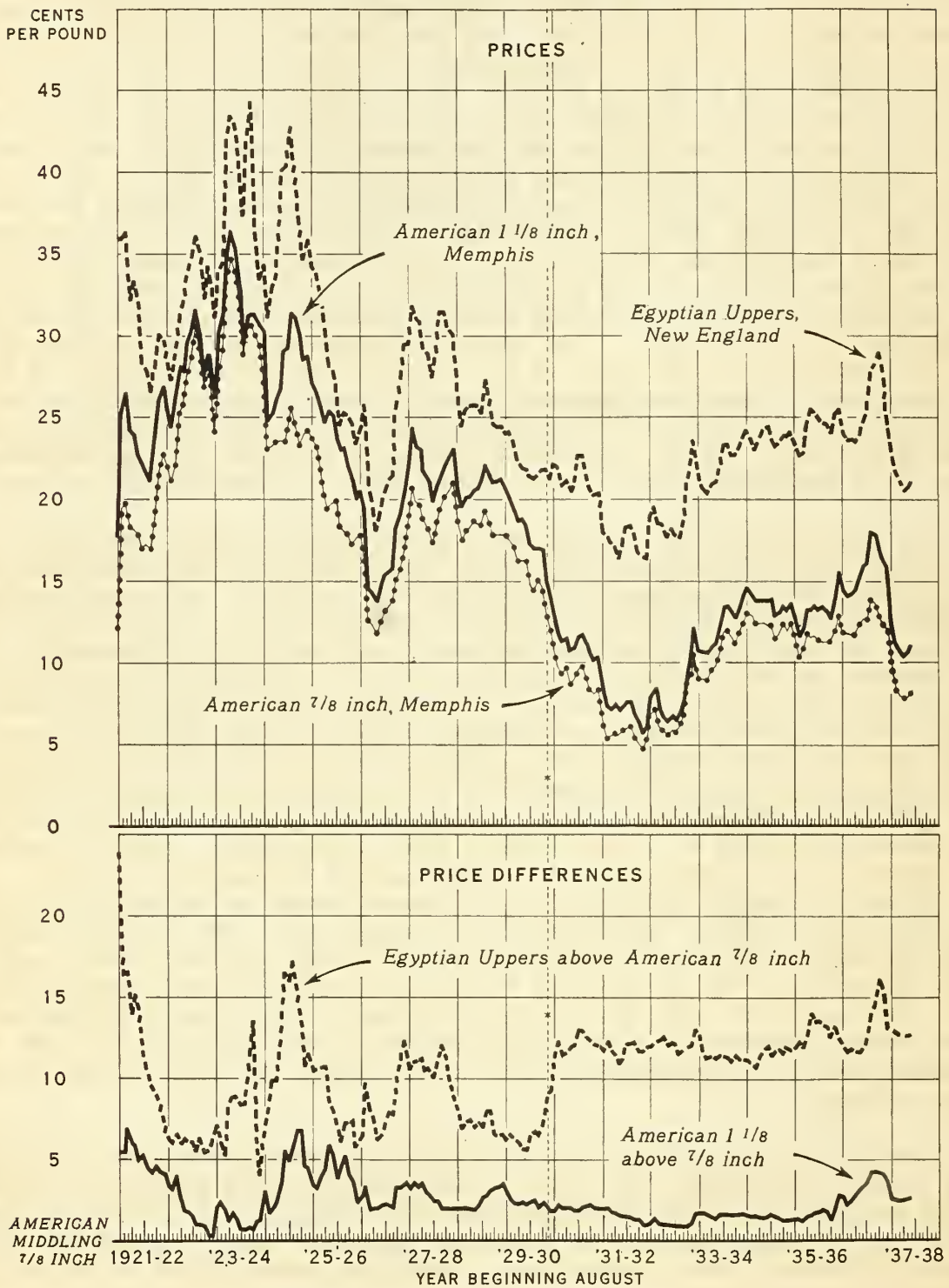
With respect to the effect of the duty on the price of short-staple, it should be noted that in the first place there could have been no direct effect since short-staple is free of duty. Short-staple could have benefited only indirectly from the duty if at all. Any net transfer of demand from Egyptian Uppers to short-staple in the world market that might have resulted from the duty would have been so small, relative to the world consumption of short-staple, as to have had only a negligible effect on the domestic price of short-staple. Few figures on world consumption and production of short-staple, as distinct from long-staple, are available but it has been estimated that in the 5 years 1927-31 the total world production of short-staple cotton amounted to about 23,559,000 bales. 26/ Even if short-staple had received all of the decrease in the world consumption of Uppers that it is estimated was caused by the duty, and even if we set this figure at 30,000 bales as discussed above 27/ this would represent an addition of only a small fraction of 1 percent to the world consumption of short-staple. The benefit to short-staple was necessarily much less than this because most of the reduction in the consumption of Uppers was transferred to American long-staple rather than to short-staple and because 30,000 bales is believed to be a maximum reduction in the consumption of Uppers caused by the duty. It is, therefore, concluded that the duty on long-staple cotton had a negligibly small effect on the price of short-staple cotton.

It is also believed that in the 7 years since the duty went into effect the average price of American long-staple would not have been lower than the average price of short-staple if there had been no duty. Under very unusual circumstances such as a very short crop of short-staple, combined with a very large crop of long-staple, and coupled with good demand for short-staple, and slack demand for long-staple, the domestic price of long-staple might, over short periods of time, be as low as, or even lower than, the price of short-staple. Prices of 1-1/8-inch and 7/8-inch cotton are not available prior to August 1920 but since that date the monthly average price of Middling 1-1/8-inch at Memphis has never been less than 0.3 cent per pound higher than Middling 7/8-inch. (Figure 2.) It is believed that though long-staple cotton might conceivably sell for a lower price than short-staple, such a situation would depend upon a combination of so many unusual circumstances that it is very unlikely to occur, and even if it occurred, would be of very short duration. In only 11 of the 204 months in the period since 1920 has the monthly average premium of Middling 1-1/8-inch over 7/8-inch been less than 1 cent per pound. (Figure 2.) It is concluded on this point that though American long-staple might sell for less than short-staple under very unusual circumstances in the domestic market for a very short period of time it could not have averaged lower over the last 7-year period even if there had been no duty on long-staple cotton.

In the 7 seasons since June 1930 when the 7-cent-per-pound duty on long staple cotton took effect, the price of American Middling 1-1/8-inch cotton at Memphis has averaged 11.61 cents per pound and the price of 7/8-inch cotton at Memphis has averaged 9.81 cents. (Figure 2 and table 7.) The premium of American 1-1/8-inch over 7/8-inch has, therefore, averaged 1.8 cents per pound

26/ World Cotton Situation - Foreign Cotton Production - Bureau of Agricultural Economics, April 1935, Table 1, p. 10 of Summary. (Mimeographed.)
27/ See pages 21 and 22.

COTTON: PRICES OF AMERICAN MIDDLING 7/8 INCH AND 1 1/8 INCH AT MEMPHIS, AND EGYPTIAN UPPERS AT NEW ENGLAND MILL POINTS, AND PRICE DIFFERENCES, 1921 TO DATE



* TARIFF OF 7 CENTS PER POUND EFFECTIVE JUNE 18, 1930

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FIGURE 2

in this 7-year period. (Figure 2 and table 7.) This average premium of 1.8 cents per pound which has existed in the 7 years since the duty took effect may be thought of as setting the maximum possible average amount the duty could have raised the United States price of American 1-1/8-inch cotton in the period.

It is not possible with available data to estimate accurately what part of the 1.8-cent premium actually was due to the duty. As a result of the depression and other factors, the price of all cotton was much lower after the duty took effect than before but even so, it is believed that a substantial part of the 1.8-cent premium on long-staple would have existed in the 7-year period even if there had been no duty and therefore it is believed that only a part of the 1.8-cent premium was due to the duty.

In the 10 seasons prior to the imposition of the duty the average premium of Middling 1-1/8 over 7/8 at Memphis was 3.40 cents per pound and the average price of 7/8-inch at Memphis was 20.37 cents per pound. This average premium of 1-1/8 over 7/8 was, therefore, 16.7 percent of the price of 7/8-inch (table 7). In the 7 years since the duty took effect in June 1930, the price of 7/8-inch cotton at Memphis has averaged 9.81 cents per pound. Had the average relationships between the world supplies of long-staple and of short-staple cotton and the world demand for these cottons during the post-duty period been roughly similar to average relationships in the pre-duty period, the premium on American 1-1/8 possibly would have been about 16.7 percent of the average post-duty price of short-staple in the absence of a duty or about 1.6 cents per pound. Under such assumptions it would be concluded that the duty raised the premium and therefore the price of American 1-1/8-inch cotton about 0.2 of a cent per pound. It is probable, however, that there were factors other than the duty which tended to increase the average post-duty percentage premium relative to the average pre-duty percentage premium. This would appear to be borne out by the fact that during the 7 years following the imposition of the duty cotton prices averaged materially lower than in the preceding 10 years (the only pre-duty years for which data are available) during which period there was a small degree of inverse correlation between (1) the percentage premium for 1-1/8 over 7/8 and (2) the price of 7/8. On the other hand, it is probable that there were non-duty factors which tended to decrease the 7-year average post-duty percentage premium in comparison with the average for the preceding 10 years. It is difficult to determine which of these two sets of factors exerted the greatest influence. If it were known that the effects of the non-duty premium-decreasing factors were greater than those of the premium-increasing factors then it would follow that the duty raised the price of Upland 1-1/8-inch more than 0.2 cent. But even assuming the non-duty premium-decreasing factors had a greater effect than those operating in the opposite direction it hardly seems likely that their effects would be sufficiently greater to indicate that the duty raised the price of 1-1/8 as much as 0.5 cent which would be 2-1/2 times as great as that indicated if the effects of these two sets of factors were assumed to be exactly equal.

An analysis similar to that above of the premiums of the price of American Upland 1-3/16 and 1-1/4 inches in staple over that of 7/8-inch would indicate that the duty could have raised the prices of these lengths more than the maximum of 1.8 cents indicated above for 1-1/8-inch cotton. As the bulk of the Uppers cotton imported into the United States, however, is shorter in staple than 1-3/16 inch and, therefore, is believed to be more directly competitive with

American Upland 1-1/8 inch, it seems reasonable to believe that the duty probably had no more and possibly had less effect on the prices of 1-3/16 and and 1-1/4-inch cotton than upon 1-1/8-inch.

EFFECTS ON EGYPTIAN EXTRA LONG-STAPLE AND AMERICAN-EGYPTIAN OR PIMA COTTON

This section of the report will deal primarily with a discussion of American-Egyptian or Pima and with Egyptian extra long-staple cotton. The annual domestic production of this extra long-staple cotton has, in the last 10 years, consisted of 8,000 to 30,000 bales of American-Egyptian or Pima cotton, and only about 50 to 4,000 bales of Sea Island. Imported Egyptian extra long-staple cotton makes up most of the domestic requirements, and immediately prior to the duty accounted for about three-fourths of total domestic consumption of extra long-staple cotton which included a small amount of extra long-staple Peruvian and a few hundred bales of imported Sea Island cotton.

Since total domestic consumption of Pima and Egyptian extra long-staple averaged less than 1 percent of total mill consumption of all cotton in the United States in the 3 seasons prior to June 1930, it is not surprising that the statistics of disappearance and consumption do not agree, either in the case of Pima (table 9), or in the case of the imported extra long-staple (table 8). The lack of adequate and reliable data constitutes one of the greatest handicaps in making the study. Every effort has been made to secure the best data available, and to recognize their limitations.

It is believed that recorded statistics of Egyptian extra long-staple imports prior to June 1930 were somewhat too large. Pre-duty disappearance is, therefore, also too large. It is probable that, since all cotton was free of duty prior to that date, the staple length as reported by importers was accepted by customs authorities even though such reports might often be based on commercial rather than official standards. Since the former would include cotton about 1/16 to 1/8 inch shorter than the official standards for staple, this may have caused the imports of 1-3/8 and up as reported in those years to be too large. Since the tariff has been in effect, imports have been more carefully reported and have been reported on the basis of the official standards. This seems to be at least a partial explanation why the disappearance figures are considerably larger than the estimates of consumption for the years prior to 1930-31.

Pending further research, it is not considered advisable to attempt any very definite explanation of the large discrepancy between Pima consumption and disappearance in certain years.

In analyzing the effect of the duty on the price of Pima, an attempt is first made to evaluate the effect of the duty on the price and consumption of imported Egyptian extra long-staple cotton and from this to determine its effect on the price and consumption of Pima. The analysis will be divided into three parts, as follows:

Effect of the duty on the differential in price of extra long-staple Egyptian in New England above the price in Alexandria.

Effect of the duty on domestic and foreign consumption and price of extra long-staple Egyptian.

Effect on Pima as indicated by changes in Egyptian extra long-staple consumption and price.

Effects on Egyptian Extra Long-Staple

Effect on Egyptian extra long-staple inter-market price differential.- The price of Sakellaridis in New England and Alexandria before and after the imposition of the 7-cent-per-pound duty on June 18, 1930 is shown in figure 3. The price of Sakellaridis is used as representative of the prices of Egyptian extra long-staple cottons. The spread between the prices in the two markets is the price differential that will be discussed.

Since Sakellaridis and other somewhat similar Egyptian cottons continued to be imported, though at reduced volumes, after the duty was imposed in June 1930 (table 8), it would be reasonable to expect that except for such changes as might have been caused by non-duty factors 28/ the inter-market price differential would increase by about the amount of the duty.

In the pre-duty period beginning with the 1923-24 season, the first complete season following the imposition of the Tariff Act of 1922 which restored this cotton to the free list, the New England price of Sakellaridis exceeded its price in Alexandria by the following amounts:

1923-24	7.31¢ per lb.	1927-28	1.68¢ per lb.
1924-25	3.03¢ per lb.	1928-29	2.10¢ per lb.
1925-26	3.71¢ per lb.	1929-30 (1st 10	
1926-27	2.06¢ per lb.	months)	2.18¢ per lb.

Average above ..... 3.18¢ per lb.

On the average for the entire 82-month-pre-duty period the price of Sakellaridis in New England exceeded the price in Alexandria by 3.18 cents per pound.

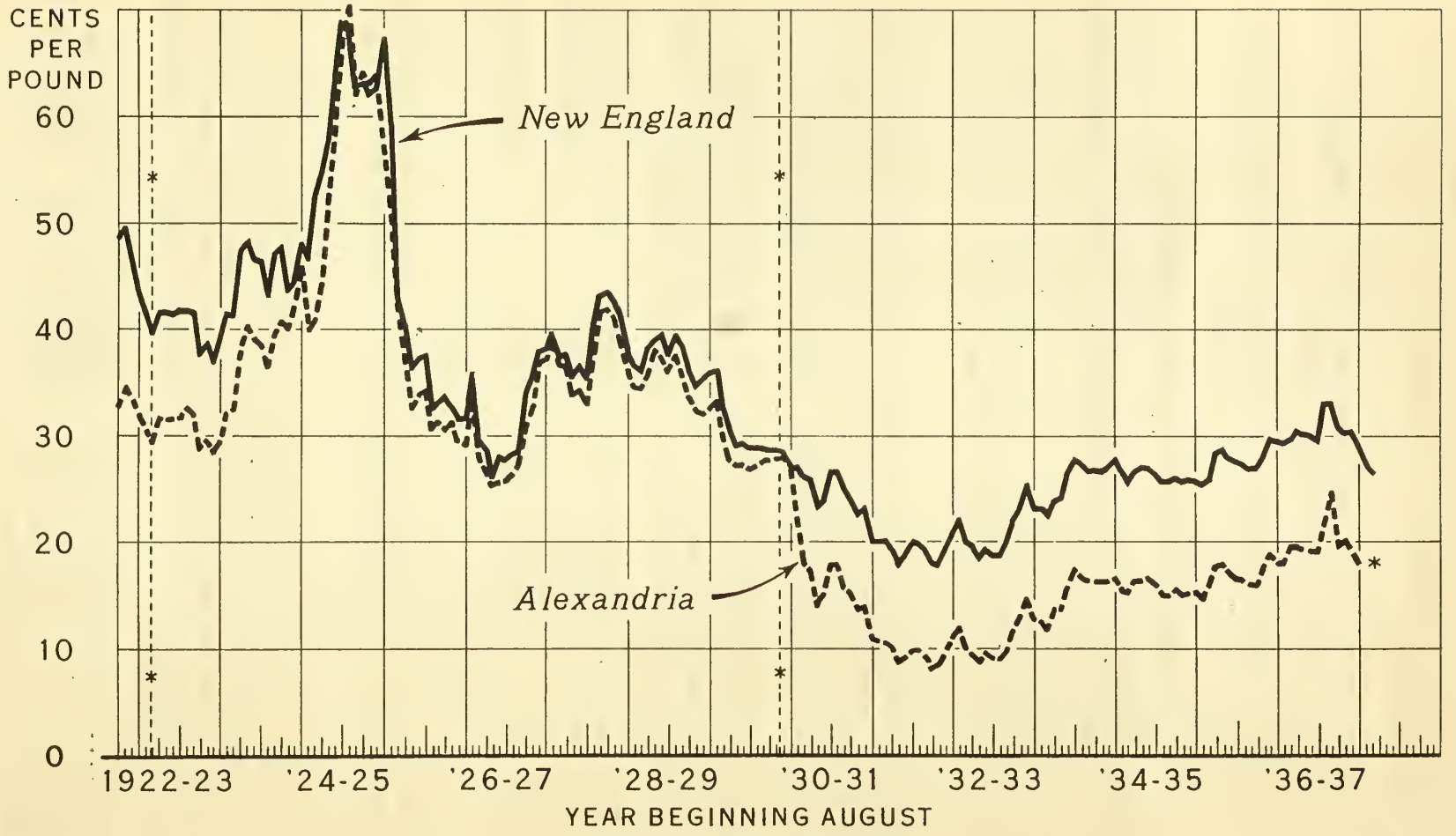
In May 1930 the New England price of Sakellaridis exceeded the Alexandria price by 1.06 cents per pound. The 7-cent-per-pound duty became effective on June 18, 1930. Three months later the margin averaged 5.29 cents per pound, the following month (October) it averaged 8.07 cents per pound, and it has been larger than that in every subsequent month. The post-duty annual averages are as follows:

1930-31	7.78¢ per lb.	1934-35	10.65¢ per lb.
1931-32	9.67¢ per lb.	1935-36	10.68¢ per lb.
1932-33	10.01¢ per lb.	1936-37	10.67¢ per lb.
1933-34	10.52¢ per lb.		

Average above ..... 10.00¢ per lb.

28/ See conditions listed in connection with Egyptian Uppers, page 8.

COTTON, EGYPTIAN SAKELLARIDIS, FULLY GOOD FAIR: PRICES AT NEW ENGLAND MILL POINTS AND ALEXANDRIA, EGYPT, MAY 1922 TO DATE



*TARIFF OF 7 CENTS PER POUND REMOVED SEPTEMBER 22, 1922, AND RESUMED JUNE 18, 1930

* PRELIMINARY

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FIGURE 3

In the 7 pre-duty years the average margin of the New England over the Alexandria price of Sakellaridis was 3.18 cents per pound, and in the 7 post-duty years it has averaged 10.00 cents per pound, an increase of 6.82 cents per pound. The fact that such costs of importation as ocean freight, interest, and insurance averaged lower in the 7 years ended 1936-37 than in the pre-duty period has tended to cause the spread to widen less than 7 cents. Likewise, the fact that the relative quality of the cotton quoted in the two markets may change somewhat from time to time might also contribute to the failure of the spread to widen by the exact amount of the duty. In this connection it is significant to note that there is a rather wide variation in the quality of Sakellaridis cotton and that the price quotations used, particularly those for the United States during the post-duty years, were not based on exactly the same quality of cotton at all times. For these and similar reasons, it seems clear that the actual change in the inter-market price differential following the imposition of a duty can usually not be taken as an exact measure of the effect of the duty on that differential. But for the same reasons as were given with respect to Egyptian Uppers (page 8), it is believed that the 7-cent duty caused the spread between the United States and foreign price of a given quality of Sakellaridis to have averaged very nearly 7 cents per pound greater during the 7 post-duty years than would have been the case without the duty.

Effect of the duty on domestic and foreign consumption and price of extra long-staple Egyptian.- As was indicated in discussing the incidence of the duty on the price of Egyptian Uppers (page 10), the important thing to determine with respect to the price effect of the duty is the extent to which the duty raised the United States price and lowered the price in foreign countries. Any duty acts as a wedge driven between the price of the dutiable article in the duty-laying country and the price of the article in the country from which it is imported. Like any other wedge, it tends to move the separated parts in opposite directions.

Due to lack of data, it has been found extremely difficult to arrive at a very definite quantitative conclusion concerning the absolute effect of the duty on the price of Sakellaridis cotton. By carefully examining the situation with respect to domestic and foreign consumption of extra long-staple Egyptian cotton, certain general conclusions have been drawn which seem quite reasonable.

Unfortunately, there are no regularly reported data on the consumption of Sakellaridis or other extra long-staple cotton in this country either on a monthly or on an annual basis. For the 4 seasons 1927-28 to 1930-31 the domestic consumption of Egyptian cotton 1-3/8 inches and up in staple length has been estimated by the Bureau of Agricultural Economics 29/ on the basis of sample data obtained from cooperating mills and the total consumption of Egyptian cotton as reported by the Bureau of the Census. The only other consumption estimate available is an estimate for the calendar year 1932 made by the Tariff Commission on the basis of census data and questionnaires to manufacturers (table 8). Since 1928-29 it has been possible to calculate the domestic disappearance (imports adjusted for changes in stocks) of Egyptian cotton 1-3/8 inches and longer in staple. In the

29/ Staple Length of Foreign-grown Cottons Consumed in the United States 1928-1931, Bureau of Agricultural Economics. (Mimeograph.)

earlier years most of this was Sakellaridis but in later years an increasing proportion has been of other Egyptian extra long-staple varieties.

If all of the data were accurate the consumption and disappearance data would agree. Unfortunately, there are very large discrepancies, especially in the years prior to the duty. In those years the disappearance is much larger than the consumption figure. It has been suggested 30/ that especially in the pre-duty years, most of the discrepancy may have been due to an overstatement of the imports of Egyptian cotton 1-3/8 and up used to derive the disappearance figures. Import statistics are made up from descriptions on the entry forms, which may represent, in many instances, commercial designations not actually 1-3/8 inches by Government standards. It is probable that since the duty went into effect the importers have described the different staple lengths more accurately than they did prior to the duty. On this basis it is believed that the consumption figures given in table 8 are more nearly accurate than the disappearance figures prior to 1930-31. In this analysis the average estimated consumption of extra long-staple Egyptian cotton in 1928-29 and 1929-30 is used 31/ and in the 7 post-duty years the average disappearance is used. These figures show a decline from 59,100 bales in the pre-duty period to 39,700 bales in the post-duty period.

On this basis it appears that the post-duty consumption of Egyptian extra long-staple cotton might have been about 20,000 bales less than the average consumption in the 2 pre-duty years, which is a decline of 33 percent.

After having estimated the decline in the domestic consumption, the next problem is to estimate what part of this decline in the United States consumption of Egyptian extra long-staple cotton was due to the duty and what part was due to other factors. Such an estimate necessitates making an appraisal of the extent to which the domestic consumption of this cotton is affected by changes in its price of 7 cents per pound or less or of the extent to which the depression or certain other factors might have reduced domestic consumption of this cotton, even if the domestic price in the post-duty period had averaged 7 cents per pound lower than it did.

A report issued by the Tariff Commission in 1922 32/ stated that the sewing thread industry was, at that time, apparently the largest consumer of Sakellaridis cotton. That industry was said to have required Sakellaridis not only for making fine thread but also for making coarse thread where special strength was required, such as shoe thread. A more recent report 33/ issued by the Commission contains an estimate based partly on a special compilation by the Census Bureau and partly on a questionnaire sent by the Commission to manufacturers, which shows that in the calendar year 1932 approximately three-fourths of the United States consumption of Sakellaridis and other imported extra long-staple was used in the thread industry, about one-eighth in the tire fabric industry, and the remaining one-eighth about equally divided between the fine goods industry and other industries, chiefly the knit goods industry.

30/ Long-Staple Cotton, Report No. 85, U.S.Tariff Commission, 1935, p. 53.
31/ See second preceding note for reference.
32/ The Emergency Tariff Act and Long-Staple Cotton, p. 17.
33/ Long-Staple Cotton, Report No. 85, U.S. Tariff Commission, pp. 55 and 57.

It is probable that these percentages were somewhat different in other years but data for utilization in all industries in those years are not available.

It will not be possible to estimate the change in the output of each of the four of the industries using Egyptian extra long-staple cotton that occurred after the imposition of the duty. Some information is available, however, for the three industries (thread, tires, and fine goods) which in 1932 apparently used more than 90 percent of all imported extra long-staple cotton consumed.

The figures on the production of thread in census years given in table 5 indicate that the production of thread increased from 25,250,000 pounds in 1929 to an average of 27,395,000 pounds in the 3 post-duty census years or an increase of about 8-1/2 percent.

It is believed that thread production would not have increased much more than 8-1/2 percent, even if there had been no duty on Egyptian extra long-staple cotton. In the first place, Sakellaridis and other Egyptian extra long-staple cotton is only about one-half of total cotton used in thread (table 6). In the second place, thread constitutes a very small part of the cost of a shirt, a dress, a suit, or of most other products in which thread is used, and for that reason the demand for thread, and therefore the demand for cotton by the thread industry, is probably very inelastic. For instance, if the price of Sakellaridis and all other cotton used in thread doubled in price and the price of thread doubled, it would probably add less than 5 cents to the cost of producing a shirt or a dress which sells for from $1.00 to $10.00 or more. Since, however, Egyptian extra long-staple cotton is only about half of the cotton used in thread, and since the duty could not have raised the price of that half more than 7 cents per pound, any increase in cost resulting from the duty would be a negligible fraction of the price of the finished article in which the imported extra long-staple was used. It seems reasonable to believe, therefore, that the production of thread probably was affected to a very small extent by any change in the price of Egyptian extra long-staple cotton that might have been caused by the 7-cent duty.

If Sakellaridis and other Egyptian extra long-staple cotton were the only kind of cotton which could be used in the thread industry then, since the demand for cotton in that industry is (as indicated above) probably very inelastic, any increase in the price of these cottons due to the duty would not cause an important reduction in the consumption of them in that industry. But Egyptian extra long-staple is not the only cotton used in thread. In the 3 years for which estimates are available it comprised about 50 percent of total cotton used in thread, American long-staple Upland from 30 to 50 percent, and Egyptian Uppers as high as 15 percent of total cotton used in thread (table 6). Small amounts of Pima and Sea Island have also been used. It is believed very little short-staple cotton is used in thread. In view of the use of other cottons in thread, the possibility of substitution must be examined.

Most of the Sakellaridis and other somewhat similar cotton is about 1-3/8 inches or longer in staple length, practically all of the long-staple Upland and Egyptian Uppers is less than 1-1/4 inches in length. On the other hand, most of the Pima cotton is considerably longer than Sakellaridis. For many uses it is very important that thread be of uniform strength and diameter. It is difficult

to secure uniformity in the product when cottons with marked differences in staple-length are mixed. For this reason there is probably very little mixing of Sakellaridis and other similar Egyptian cottons with Egyptian Uppers, American Upland, or American-Egyptian in the production of thread. Therefore, it is believed that if substitution takes place it takes the form of a substitution of thread produced from Pima, American long-staple, or Egyptian Uppers, for thread from Sakellaridis and other similar Egyptian cottons rather than by using a smaller proportion of the extra long-staple varieties in a given batch of thread. The question as to the effect of the duty on the consumption of Egyptian extra long-staple in the thread industry, therefore, takes this form: If the duty raises the price of Sakellaridis and, therefore, the price of thread made out of Sakellaridis and does not raise the price of thread made out of other cotton, will this result in the substitution of the latter kind of thread for the former? If this substitution does not occur, then the duty will have little effect on the consumption of Sakellaridis in thread, since the demand for thread, particularly thread made from Sakellaridis because of its special characteristics is, as previously indicated, probably very inelastic.

Several considerations point toward the conclusion that a 7-cent duty on Egyptian extra long-staple would not cause a noticeable displacement of thread made from Sakellaridis and other Egyptian extra long-staple by thread made from other cotton. Most of the thread produced in the United States is used by manufacturers rather than by housewives. Thread produced for industrial uses is estimated to be from two to two-and-one-half times the quantity produced for household use. 34/ The reaction of industrial users to a change in the price of thread is, therefore, of more importance than that of other users. Furthermore, the duty is of course, a smaller fraction of the retail price of thread to domestic users than of the wholesale price to industrial users. Thread produced from Sakellaridis has been preferred by industrial users because of its higher resistance to breakage and its high luster, either when natural or when mercerized.

With the increase in the speed of sewing machines resulting from the application of mechanical motive power and other improvements and with the use of finer needles and finer needle eyes, industrial users have placed an increased emphasis on strength, evenness of thread structure, elasticity, resistance to heat, and other factors affecting resistance to breakage. Furthermore, there has been a tendency in recent years for large users of thread to test their thread purchases as to size, strength, yardage, and quality. 34/ The use of a thread subject to an undue amount of breakage may reduce the quality of the finished product in addition to causing a loss from machine stoppages. Machine stoppages result in a reduction in output without a corresponding reduction in expenses.

In this connection, it should be noted that the lowest average annual value per pound of all thread produced in the United States in the census years 1921-35 was $1.01 and that some of the thread from the better qualities of Egyptian cotton might ordinarily sell for twice the price of the average quality of thread. An increase, therefore, of 10 cents a pound in the price of thread (including an allowance for manufacturing waste) due to the 7-cent duty on cotton, which would be approximately a maximum since the duty raised the domestic price of the imported cotton less than 7 cents, would represent an

34/ Cotton Sewing Thread and Cottons for Handwork, U.S.Tariff Commission, 1927.

increase of 5 to possibly 10 percent in the price of thread. This would hardly constitute a significant reason for a manufacturer changing to other thread in view of the substantial losses that might result from using a slightly cheaper thread, particularly when the thread represents such a small proportion of the manufacturer's finished product.

The above argument that any substantial part of any shift away from Egyptian extra long-staple that might have occurred in the thread industry in the post-duty period was not due to the duty is substantiated to a considerable extent by the fact that there was no such shift in the first 3 years of that period. On the basis of returns from questionnaires, the United States Tariff Commission estimated that in 1929 Sakellaridis constituted 49.8 percent of total cotton in thread; in 1932, 53.9 percent; and in the first 9 months of 1933, 48.2 percent (table 6). These data indicate very little shift away from Sakellaridis toward other cottons up to the latter part of 1933. This cotton, therefore, maintained its relative position among other cottons used in the thread industry for over 3 years after the duty was enacted. It would seem that if the duty were going to decrease materially the ratio of Egyptian extra long-staple to total cotton used in thread, that the 3-1/4 years from June 18, 1930 through September 1933 would have been a long enough time for this to have shown results.

In view of the character of the demand for Egyptian extra long-staple in the thread industry outlined above and the fact that there was no shift away from this cotton to other cottons in the thread industry in the first 3-1/4 years after the imposition of the duty, it would seem reasonable to assume that any shift away from the use of this cotton in thread that might have occurred after 1933 would not be to cottons as materially different in staple length and other characteristics as Pima, American long-staple Upland, and Egyptian Uppers. Any shift to the latter cotton would probably not be attributable to the duty because Uppers was subject to the same duty as extra long-staple and because, as indicated on pages 10 to 11, the duty probably raised the domestic price of that cotton by almost the entire amount of the duty. Though any shift away from Egyptian extra long-staple probably did not benefit the cottons mentioned, there nevertheless might have been a small shift away from this cotton because after 1933 there were increasing supplies of certain other cottons only slightly shorter in staple length.

An examination of Egyptian export statistics by variety shows that, since 1933, there have been marked increases in the exports of Giza to the United States. Unpublished data with respect to the staple length of the Giza cotton imported into the United States indicate that a considerable proportion of it is just under 1-3/8 inches in staple length. The exports of Egyptian Sakellaridis to the United States, on the other hand, have decreased from 51,000 bales in 1933-34 to less than 6,000 bales in 1936-37. This marked shift from Sakellaridis to Giza has apparently been due in a large measure to changes in the relative supplies of these cottons which in turn has been due in part to activity on the part of the Egyptian Government in the promotion of the production of Giza in place of Sakellaridis. Trends in the production and supply of these two varieties are indicated by the following figures on ginnings:

Variety	1930-31	1933-34	1936-37
	Bales	Bales	Bales
Sakellaridis ...	437,000	239,000	108,000
Giza 7	4,000	91,000	391,000

It is possible, therefore, especially following 1932-33, that an increasing percentage of the imports of Egyptian cotton 1-1/8 to 1-3/8 inches in length, shown in table 2, was near the upper end of the bracket and this would at least constitute a new supply of such cotton which might have been used instead of Egyptian extra long-staple in the thread industry. Again, however, it may be pointed out that even if such a shift did occur it was in only a minor degree due to the duty since Giza 7 and similar cotton is dutiable and its domestic price was probably raised by the duty about as much as the price of Egyptian Uppers.

Though it has been concluded that the duty probably caused little, if any, shift away from Egyptian extra long-staple to other cottons in the thread industry, this should not be taken to imply that there was no such shift after the duty went into effect due to other causes. Data are not available to show that there has, or has not, been such a shift in the thread industry for the post-duty period as a whole, but available data do show that there was no shift up through the latter part of 1933. Such incomplete figures as are available seem to indicate that all of the estimated 20,000-bale decline in the domestic consumption of Egyptian extra long-staple might be accounted for without the necessity of assuming any decrease in the ratio of Egyptian extra long-staple to total cotton used in the thread industry. As indicated in the preceding paragraph, however, there might have been some shift in this industry after 1933 from cotton 1-3/8 inches or slightly longer in staple to imported cotton just under 1-3/8 inches. But, for reasons already outlined, it is believed that if there were such a shift in the thread industry after 1933 it was due principally to causes other than the duty.

Most of the long and extra long-staple cotton used in tires is used in truck and bus tires as indicated above (page 13). The number of truck and bus tires produced in the post-duty period was 4 percent smaller than the estimated average for the 2 pre-duty years (table 3). It is believed that the duty on extra long-staple cotton can not be held responsible for any considerable part of the decline in the production of bus and truck tires. Sakellaridis and other Egyptian extra long-staple cotton probably constituted a minor fraction of all long-staple cotton in truck and bus tires in both the pre-duty and post-duty period. 35/ The increase in the cost of truck and bus transportation that would result from a 7-cent duty on such a minor fraction of the cotton used in truck tires may be assumed to be negligible. This was also shown to be true for Uppers cotton which is a much larger fraction of the cotton used in truck tires. (See pages 14, 15.)

35/ Table 4 shows that Sakellaridis was only 1.6 percent of all cotton in all tires in 1932 and 0.2 percent in 1935-36.

On the other hand, the duty might have had some tendency to cause the substitution of other cottons, such as Pima and American long-staple Upland, for Egyptian extra long-staple in the tire industry. Table 4 indicates that in 1928 Uppers and Sakellaridis constituted 21.4 percent of all cotton in tires and American Upland long-staple and Pima accounted for 8-1/2 percent. In 1932 the imported cottons accounted for only 10 percent, with the domestic long-staple cottons supplying an equal percentage. In 1935-36 the imported cottons only amounted to 3.6 percent of the total whereas the two domestic long-staple cottons had increased to 26.2 percent of the total.

Whatever the decrease in the ratio of Sakellaridis and other Egyptian extra long-staple to total cotton in tires may have been, it was probably not all due to the duty. There has been a tendency for tire fabric manufacturers to use shorter and cheaper staples in the production of tire fabrics. This has been made possible by improved methods of manufacture of tire fabric and was under way several years before the duty was enacted.

The available data pertaining to the fine goods industry, which in 1932 is estimated to have used about 6 percent of the Egyptian extra long-staple cotton consumed in the United States, are also incomplete. Every indication, however, points to a very substantial reduction in the quantity of fine goods produced following 1930. Most of the extra long-staple used in fine goods is in yarns with a count of over 60. 36/ The estimated cotton content (allowing 30 percent for waste) of cotton yarns 61's and over produced for sale and for use by the producing mills in census years as reported in pounds of yarn by the Bureau of the Census has been as follows:

1929	151,300 bales of 500 lb.
1931	87,700 " " " "
1933	not available
1935	83,000 bales of " "
Average 1931 and 1935	85,000 " " " "

On the basis of the above data there was an apparent reduction in the production of cotton yarns 61's and over of about 44 percent in the post-duty period as compared with the pre-duty period. One factor pointing to a larger decline than this is the fact that in 1929 there was a large amount of yarn produced that was not classified according to yarn count, a part of which might have been 61's and over. On the other hand, the average production of yarns 61's and over in 1931 and 1935 was probably considerably smaller than the average production for the 7 post-duty years used throughout most of this report, whereas the production in 1929, except for the reason just mentioned, was probably more nearly representative of the pre-duty period used. With the cost of the raw material a comparatively small part of the price of fine goods it is safe to say that a rather small part of the decline in the output of fine goods was due to any increase in the price of raw cotton which may have occurred due to the duty.

It is estimated by the Tariff Commission (table 10) that Egyptian extra long-staple cotton did not constitute more than 1.86 percent of the total cotton

36/ Long Staple Cotton, United States Tariff Commission, 1935, page 63.

used in fine goods in 1929; not more than 1.29 percent in 1932 and not more than 1.99 percent in the first 9 months of 1933. Though these figures indicate some shift away from this cotton between 1929 and 1932 they also indicate that this trend was reversed between 1932 and the first 9 months of 1933. In view of the small amounts of this cotton involved, however, (about 3,000 bales in 1932) it is again admitted that these estimates pertaining to the quantity and percentage of Egyptian extra long-staple cotton used in the fine goods industry are not necessarily very accurate since the failure of a single important user of this cotton to report would materially affect the estimates. This and the lack of any estimates for other post-duty years make it difficult to evaluate the effect of the duty on the substitution of other cottons for Egyptian extra long-staple in the fine goods industry. Nevertheless, such data as are available indicate that there was little or no decline in the proportion of this cotton in the fine goods industry between 1929 and 1932, and the first 9 months of 1933. It would appear that the 3-1/4 years from June 1930 to September 1933 provided sufficient time for the duty to have caused a shift if it were going to do so.

As already stated (page 30) it has been estimated by the Tariff Commission that in 1932 all but about 1/16 of the Sakellaridis and other imported extra long-staple cotton used in the United States was consumed by the manufacturers of thread, tire fabrics, and fine goods. Of the remaining 1/16 it is thought that most of it was consumed by the knit goods industry. Available data with respect to the quantity of raw cotton and purchased cotton yarn used by this industry in 1929 and in 1931 and 1933 indicate that the quantity of this cotton used by the knit goods industry probably would have been less in the 7 years following the imposition of the duty than in the years immediately preceding, even if there had been no duty. Furthermore, data gathered by questionnaire and released by the Tariff Commission, together with the estimates of total domestic consumption of this cotton, indicate that between 1929 and 1932 there was little if any decline in the quantity of Egyptian extra long-staple cotton in the knit goods industry. This would indicate that the duty could have tended to cause very little decline in the use of this cotton in this industry between 1929 and 1932.

From the above examination of the changes in the production of the principal products in which Egyptian extra long-staple cotton is used, namely, thread, tire fabric, fine goods, and knit goods, that occurred following the imposition of the duty, it would appear that these changes were probably responsible for a substantial part of the decline in the domestic consumption of Egyptian extra long-staple cotton following 1930. The above considerations would also indicate that very little of the changes in the output of these industries could be attributable to the duty. It has also been indicated that the duty probably had comparatively little tendency to cause the substitution of other cotton for Egyptian extra long-staple in the thread or fine goods industries, which together used more than three-fourths of this cotton. In other industries using this cotton, it may have caused a somewhat greater degree of substitution, but even here the effect of the duty appears to have been small.

With the thread industry several times as important as all the other industries combined as a consumer of this cotton, it would follow that if these conclusions are correct the duty was not responsible for much of the estimated decline of about 20,000 bales (see page 30) in the domestic consumption of

Egyptian extra long-staple which occurred after the imposition of the duty. Certainly not all of that decline was due to the duty. It is believed that a very conservative estimate would be that the duty could not have been responsible for more than three-fourths of the decline, or 15,000 bales.

In the 7 post-duty years the United States imports of Egyptian extra long-staple cotton averaged 33,400 bales, and the average foreign consumption (taken as production less United States imports) was 435,600 bales(table 8). It has been estimated above that the duty probably did not cause a reduction in the domestic consumption of this cotton of more than 15,000 bales. Since post-duty and pre-duty average domestic stocks of this cotton were about the same, it may by inferred that the duty caused about the same reduction in imports. A 15,000-bale reduction in imports would have been a reduction of about 45 percent. On the other hand, even if the foreign consumers had to absorb all of these 15,000 bales it would have been an increase in the foreign consumption of only about 3.4 percent. Actually, of course, foreign consumers would not have had to absorb all of the 15,000 bales the United States annually failed to import because the foreign production would have been curtailed somewhat by the decrease in the foreign price caused by the decrease in the United States imports. This indicates, of course, that except for a possible reduction in stocks, the duty would have caused at least a slight decline in world consumption of foreign extra long-staple cotton. It seems clear that a 45-percent decrease in the United States supply of this cotton should have raised the price in the United States a much greater number of cents per pound than a 3.4-percent addition to the foreign supply available for consumption would have depressed the foreign price. This is because these percentages are so widely different that the difference in their effects on the prices is not likely to be reduced much by an offsetting difference in the responsiveness of consumers to price changes in the two markets.

There is some reason to believe that the depressing effect of the duty on the foreign price of Egyptian extra long-staple cotton was greater than in the case of Egyptian Uppers. It has been estimated the duty probably depressed the foreign price of Uppers less than 1/4 cent per pound (page 11).

In the case of Uppers the estimated foreign consumption was 30 times as large as United States imports in the post-duty period but in the case of Egyptian extra long-staple the estimated foreign consumption was only 13 times as great as imports into the United States. Other things being equal, this difference in the relative size of the markets tends to indicate that the foreign price of Egyptian extra long-staple was depressed much more by the imposition of the duty than the foreign price of Egyptian Uppers was depressed.

Effects on American-Egyptian or Pima

Effects on Pima as indicated by changes in Egyptian extra long-staple consumption and price.- It was indicated in the preceding section that 15,000 bales probably would be a liberal estimate of the decrease in the domestic consumption of Egyptian extra long-staple cotton caused by the duty. However, even if this is considered established, it does not necessarily follow that all of this decrease in the consumption of Egyptian extra long-staple would be transformed into an increased demand for Pima. This will depend upon whether Pima can be substituted for Sakellaridis in the manufacture of those products in

which Sakellaridis was formerly used and upon whether there was any shift between the two cottons that might be due to the duty.

Data on disappearance and consumption of Pima do not agree. Disappearance figures based on production, stocks, and exports, indicate that there was a decrease from 22,800 bales in 1929-30 to an average of 14,800 bales in the 7 post-duty years, or 35 percent. On the other hand, Bureau of the Census figures on the consumption of Pima show an increase of 22 percent for the same periods (table 9). Most of this discrepancy is due to a large difference between disappearance and estimated consumption of Pima in 1929-30 because in the 7 years since June 1930 the average disappearance of 14,800 bales is fairly close to the average estimated consumption of 15,800 bales.

It is probable that not all of the 15,000-bale decrease in the consumption of Egyptian extra long-staple cotton attributed to the duty was transformed into an increased demand for Pima because total Pima consumption in the 7 years since June 1930 only averaged around 15,800 bales. It is not probable that there would have been only 800 bales of Pima produced and consumed if there had been no duty on Egyptian extra long-staple cotton. Though statistics by industry are meagre, they tend to throw some light on the question.

It has already been stated that the larger part of the decrease in the consumption of Sakellaridis attributable to the duty probably took place in the tire fabric industry. It is, therefore, in this industry that the greatest opportunity existed for an expansion of Pima consumption. It is estimated, however, that only 4,500 bales of Pima were used in the tire fabric industry in 1932 (table 4). When such small amounts of cotton are involved, it is obvious that the failure to report by a single large user would cause a serious error in the estimate. Conclusions based on such data can, of course, be no more reliable than the data on which they rest. Furthermore, the 4,500-bale estimate is for 1932 alone, whereas the analysis is concerned with the 7-year period following June 1930. If it be assumed, however, that the 4,500 37/ bales is a usably accurate estimate of the Pima cotton used annually in tires in the 7 years then the most that could be claimed is that if there had been no duty the consumption of Pima in tires would have been less than 4,500 bales. If 4,500 bales actually represented the amount of Pima used in tires it could be thought of as the maximum amount that Pima consumption could have benefited from the duty on Sakellaridis as far as the tire fabric industry is concerned with the actual benefit probably less than this maximum. No figures are at hand showing the amount of Pima used in tires prior to the duty, and therefore, it is not possible to state whether the ratio of Pima to total cotton used in tires has changed since the duty went into effect.

As to fine goods it may be pointed out that in 1929 Pima cotton was 3.35 percent of total long-staple cotton used in fine goods and in 1932 Pima was 3.76 percent (table 10). This increase in the Pima ratio was associated with a decrease in the Sakellaridis ratio from 1.76 percent to 1.13 percent (table 10).

37/ In this connection it is noted that in 1932 the Bureau of the Census reported a total domestic consumption of Pima by all domestic industries of 14,700 bales which is only slightly smaller than the average for the 7 years ended 1936-37 of 15,800 bales.

Here again the estimates are open to question since small actual amounts of cotton are represented. If, however, the direction of change indicated by the estimates is correct and if the estimates are correct in indicating that the changes are small it would appear that Pima might have benefited slightly in the fine goods industry over the period mentioned. But the benefit was probably small because total Pima consumption in the fine goods industry in 1932 was only 8,200 bales (table 10). Furthermore, in the first 9 months of 1933 the ratio of Pima to total long-staple in fine goods fell to 2.61 percent, thus indicating that whatever small benefit accrued to Pima up to the end of 1932 may not have been maintained in other post-duty years.

As stated above, the ratio of Sakellaridis to total cotton consumed in the production of thread did not decline up to the latter part of 1933. Furthermore, the corresponding ratio for Pima declined from 2.2 percent in 1929 to 0.3 percent in the first 9 months of 1933 (table 6). As far as these figures go it, therefore, appears that there was little or no gain to Pima in the thread industry from the duty on Sakellaridis up to the end of 1933. Reasons have already been given as to why the duty would hardly be expected to cause any significant shift from Sakellaridis to other cottons in the production of thread.

Since the estimated total consumption of Pima in miscellaneous uses, mostly knitted goods, only amounted to 700 bales in 1932, the gain to Pima from the duty on Sakellaridis in this industry was necessarily small if the estimated consumption is at all accurate.

In view of the greater limitations of the data, and of the fact that it is not possible to use a premium analysis in the case of Pima, it is not possible to arrive at as satisfactory an estimate of the effect of the duty on the price of Pima as on the price of American long-staple Upland. In fact, the difficulties are such as to make it impossible to arrive at a satisfactory estimate of the effect of the duty on the price of Pima if that estimate is to be based only on the data on Pima and Egyptian extra long-staple cotton. However, by supplementing the analysis of these limited data with certain comparisons between the situation with respect to Pima and long-staple Upland it is possible to arrive at what seems to be a reasonably useful conclusion.

As in the case of long-staple Upland, the duty probably caused some shift from the competitive imported cotton to Pima in the domestic market. On the other hand, as in the case of American Upland, the limited available data indicate that the duty also caused a shift away from the American cotton in foreign countries. In 1929-30, the only pre-duty year for which Pima exports are available, the United States exported 5,100 bales of Pima, but in the 7 post-duty years exports of this cotton averaged only 500 bales. Due to the fact that production declined from 28,800 bales in 1929-30 to an average of 14,900 bales in the post-duty period, a decline of 48 percent, it seems quite likely that much of the decline in exports resulted from this decline in production. However, in view of the 90-percent decline in exports, it would appear that a substantial portion of the decline in exports was due to the duty. This would, of course, be the reasonable expectation, since, as previously indicated the duty would tend to lower the prices of extra long-staple Egyptian cotton relative to the prices of Pima in foreign markets and thereby weaken Pima's competitive position in these markets.

If the shifts away from Pima in foreign markets were equal to the shift to Pima in the domestic market then the world consumption of Pima would not have been affected by the duty and, therefore, the duty could have had very little effect on the domestic or foreign price of Pima. However, as previously indicated (page 37), the duty probably reduced the world consumption of foreign extra long-staple cotton to a small extent. This in turn probably resulted in a slightly larger world consumption of Pima with the duty than would have been the case without the duty. Up to this point in the comparison of the effect of the duty on the two domestic cottons, the effects of the duty on Pima appear to have been quite similar to those on long-staple Upland. The principal effects of the duty on both domestic cottons would appear to have been to reduce foreign consumption and increase domestic consumption with relatively little net effect on the world consumption or upon the prices of these cottons. However, if it were true, for reasons previously given (page 37), that the duty reduced the price of foreign extra long-staple cotton in foreign markets a larger percentage than it did the price of foreign ordinary long-staple cotton, then it might be reasonable to expect that the percentage reduction in foreign production of this extra long-staple cotton resulting from the duty was at least not materially less than the percentage decline in the foreign production of ordinary long-staple cotton. In the 7 post-duty years, the foreign production of Egyptian ordinary long-staple cotton averaged 1,112,000 bales (table 2) and that of Egyptian extra-long staple averaged 469,000 bales (table 8). In the same period the domestic production of American long-staple Upland averaged 743,900 bales (table 7) and the production of Pima averaged only 14,900 bales (table 9). In view of the wide difference in the quantities involved, even a considerably smaller percentage reduction in the foreign production of extra long-staple cotton could easily be equivalent to a much larger percentage of the production of Pima cotton than a given percentage reduction in foreign ordinary long-staple represented of the domestic production of long-staple Upland. For instance, a 1-percent decrease in the production of Egyptian ordinary long-staple cotton would be only 1-1/2 percent of the production of American long-staple Upland whereas a one-half-percent decrease in the production of Egyptian extra long-staple would be 15.7 percent of the production of Pima.

For these reasons, it is quite possible that the duty raised the price of Pima considerably more than it raised the price of long-staple Upland. However, there is a greater difference between the staple length of Pima and most extra long-staple foreign cotton than between domestic and foreign ordinary long-staple. This probably means that Pima is less directly competitive with foreign extra long-staple cotton than American long-staple Upland is with ordinary long-staple foreign cotton and, therefore, probably tends to prevent Pima from benefiting more from the duty than long-staple Upland. It is believed, however that the first factor is of sufficient importance to warrant the conclusion that the price of Pima probably benefited at least as much, and may have benefited more, from the duty, than did the price of American long-staple Upland.

GRAPHIC EQUILIBRIUM ANALYSIS OF THE INCIDENCE OF THE DUTY ON THE PRICE OF EGYPTIAN UPPERS

It is the purpose here to estimate how much higher the foreign price of Uppers would have been in the 7 years following the imposition of the duty than it actually was in that period, if there had been no duty on long-staple cotton, but if all other price factors had been as they actually were during the period. In other words, the objective is to determine the average price incidence or absolute effect of the duty on the foreign price of Egyptian Uppers during the period. The principal factors that determine this are as follows:

Known factors

(1) The United States imports of Egyptian Uppers. (Average for the 7 post-duty years from table 2 equals 35,900 bales).

(2) The United States production of Egyptian Uppers or of cotton with identical characteristics. (Known to be zero and it is assumed it would be zero at any reasonable price for Uppers).

(3) The Egyptian production of Uppers. (Average of the 7 post-duty years from table 2 equals 1,112,000 bales).

(4) The foreign disappearance - which is taken as the production less United States imports - of Egyptian Uppers. (Average of 7 post-duty years from table 2 equals 1,076,100 bales).

(5) The price of Egyptian Uppers at New England Mill Points. (Average of the 7 post-duty years from table 2 is 21.97 cents per pound).

(6) The price of Egyptian Uppers in Alexandria converted to cents per pound at current rates of exchange. (Average of the 7 post-duty years from table 2 is 11.97 cents per pound).

Unknown, but estimated factors

(7) The domestic demand curve for Egyptian Uppers in the 7 post-duty years.

(8) The foreign demand curve for Egyptian Uppers in the 7 post-duty years.

(9) The foreign supply curve for Egyptian Uppers in the 7 post-duty years.

The elasticity of the demand for Uppers is determined by the reactions of consumers to changes in the price of Uppers when other factors affecting consumption either do not change or when the effect of their change on consumption is allowed for. A common method of measuring the

elasticity of demand is to compute the coefficient of the elasticity of demand. This coefficient may be difined as the ratio of a percentage change in price divided into the associated percentage change in consumption. This coefficient may be computed for any percentage change in the price, but in this paper the coefficients of demand refer only to infinitely small percentage changes, since they are intended to represent the elasticity at a point on the curve rather than over a considerable arc of the curve. Thus, the greater the percentage change in consumption that results from the percentage change in price, the larger the coefficient and the more elastic the demand is said to be. If the percentage changes in price and consumption are equal, the ratio has a value of 1 and the demand is said to be unitary. If the percentage change in consumption associated with a given percentage price change is 6 times as great as the price change, the coefficient of elasticity of demand has a value of 6.0. In the present study it will be necessary to estimate the elasticity of domestic and foreign demand for Uppers since the actual elasticity is not known.

The elasticity of supply is determined by the reactions of producers to changes in the price of Uppers. The elasticity of supply is measured by the value of the ratio of a percentage change in price divided into the resulting percentage change in production. The coefficient of the elasticity of supply also refers to the elasticity at a point on the curve.

In the case of any straight line demand or supply curve, the slope of such a line at any given point can be found if the point can be located and if the elasticity of the curve at that point can be estimated. Knowing that the straight-line curve passes through the given point and has a given slope, the entire line can then be drawn. On the other hand, if the curve is not a straight line but is assumed to have a constant elasticity throughout its length, it can also readily be drawn if it is known to pass through a given point, and if its elasticity can be estimated. Throughout this discussion, constant elasticity curves will be used instead of linear curves.

In estimating the demand and supply curves (factors 7, 8, and 9), the average approximate location of one point on each of the curves in the 7 post-duty years is known, as will be explained more fully below, and it is, therefore, only necessary to estimate the elasticities of the curves passing through those points. In doing this, all available information will be presented which would aid in making a reasonable guess as to the most probable elasticity of the curves.

Since, as a general proposition, it is usually easier to estimate reliable maximum and minimum limits within which any given unknown factor - such as the incidence of a duty - will fall than it is to estimate, with an equal degree of reliability, the exact value of the unknown factor, the procedure in the present case is an attempt to establish limits within which the incidence probably falls. However, no formal estimates are made using slopes which would give the minimum incidence of the duty on the foreign price of Uppers because the minimum incidence could not be less than zero and because the incidence is very close to zero when using curves that give what is believed to represent a "reasonable maximum" incidence of the duty. By a

"reasonable maximum" is meant a maximum which it is believed would be larger, but not much larger, than the actual incidence of the duty.

The estimate of the incidence of the duty which is given below is therefore designed to give a "reasonable maximum" incidence of the duty rather than either the minimum or the actual incidence. Though the effect of the duty on the foreign price of Uppers, as indicated in the estimate, will presumably be too large by an unknown amount, yet, if this estimated effect is, itself, very small, then the error resulting from its being too large can be neglected for the present purpose, since the maximum effect will have been determined as having been small.

Estimating position and slope of domestic demand curve for Uppers

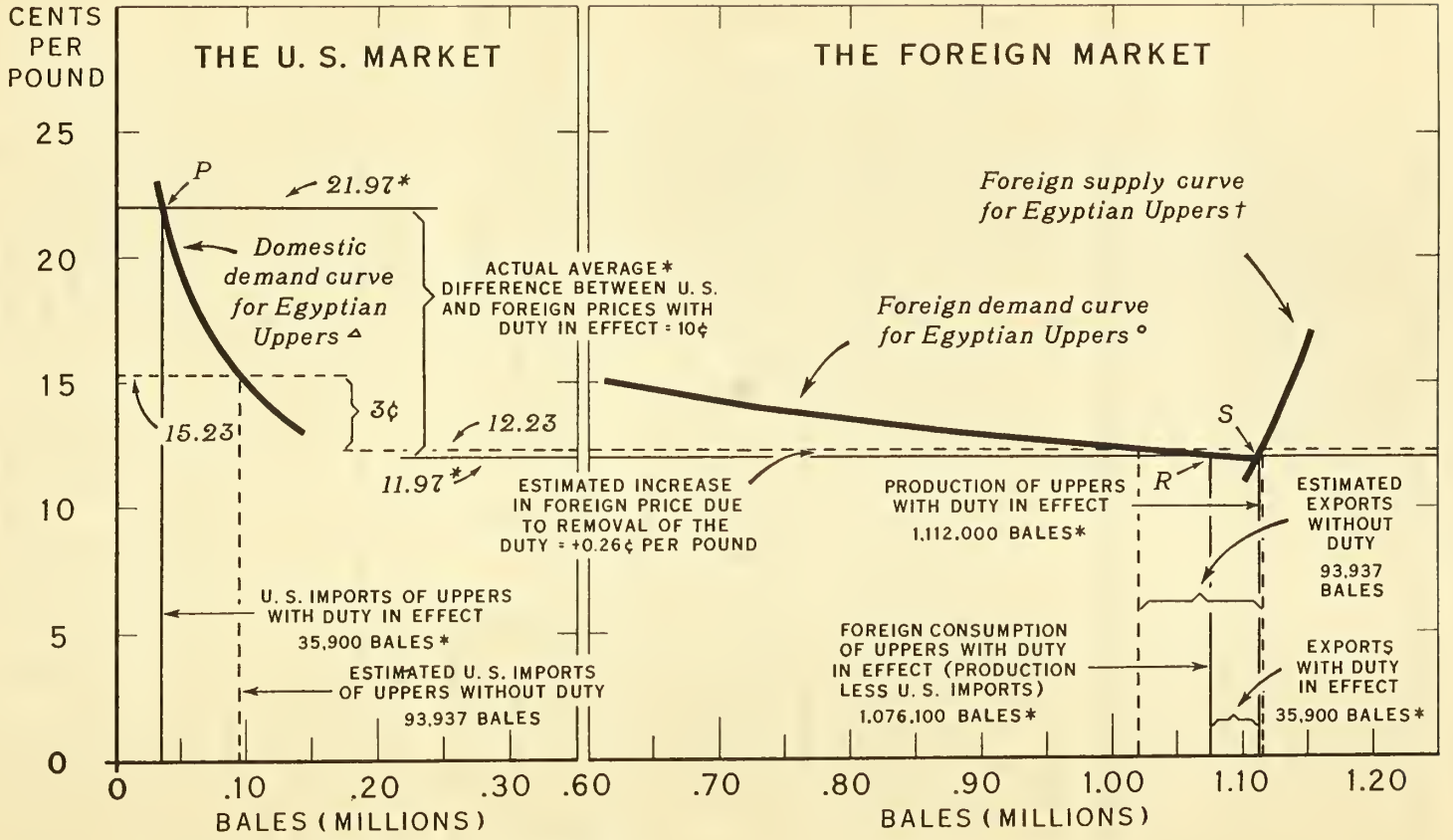
In a graphic approach, if the domestic price of Uppers is on the vertical coordinate and the quantity consumed in the United States is on the horizontal coordinate then plotting the abscissa of the average actual domestic price of Uppers in the post-duty period of 21.97 cents per pound and the ordinate of the actual average domestic consumption (or as used here of imports) of Uppers of 35,900 bales in the post-duty period, their intersection locates the point P in figure 4. It would seem reasonable to assume the average domestic demand curve for Uppers passes through point P. This is because in a given market, at a given moment, any given price-consumption point must necessarily be on the demand curve which set that price. It should follow, therefore, that a point, such as P, which represents the average of such points should fall on a demand curve which represents the average of such instantaneous demand curves. It will, therefore, be assumed that the average domestic demand curve for Uppers passes through point P.

It is generally conceded, and certain statistical analyses indicate, that the domestic demand for total cotton is quite inelastic, probably from 0.20 to 0.32 38/ This means that a very small percentage change in price would cause consumption to change in the opposite direction by an amount from 0.20 to 0.32 of that percentage.

With respect to the elasticity of demand for Uppers in the United States, there is one factor which would seem to make the domestic demand for Uppers more elastic than the domestic demand for total cotton. The fact that American long-staple Upland can be substituted for Egyptian Uppers, as the price of Uppers starts to rise, tends to make the domestic demand for Uppers more elastic than it would be if no such substitution were possible. Since there is no product that can be substituted for total cotton in the same degree in the domestic market, this would point toward a more elastic demand for

38/ See fig. 14 of An Analysis of the Effects of the Processing Taxes Levied Under the Agricultural Adjustment Act, prepared by the Bureau of Agricultural Economics and published by the Bureau of Internal Revenue of the United States Treasury Department, 1937. Also see reference to report by Division of Research and Planning, National Recovery Administration, released in May 1935, contained on pages 378 and 379 of Cotton and the AAA by Henry I. Richards, published by The Brookings Institution, Washington, D. C., 1936.

AVERAGE ESTIMATED EFFECT OF REMOVING THE 7-CENT DUTY ON PRICE OF EGYPTIAN UPPERS COTTON IN NEW ENGLAND AND ALEXANDRIA, EGYPT, FOR THE 7 YEARS SINCE IMPOSITION OF THE DUTY



——— *Actual average * with duty in effect*

- - - - *Estimated average without duty but with assumed demand and supply curves unchanged*

* *ACTUAL AVERAGE FOR THE 7 YEARS FOLLOWING IMPOSITION OF DUTY, 1930-31 TO 1936-37*

△ *ASSUMES THE DOMESTIC DEMAND CURVE HAS A CONSTANT ELASTICITY OF 2.6*

° *ASSUMES THE FOREIGN DEMAND CURVE HAS A CONSTANT ELASTICITY OF 2.5*

† *ASSUMES THE FOREIGN SUPPLY CURVE HAS A CONSTANT ELASTICITY OF 0.1*

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FIGURE 4

Egyptian Uppers than for total cotton in the United States.

On the other hand, as shown above (page 13), Uppers cotton was used principally in large truck and bus tires. The cost of the cotton used in a truck and bus tire is a much smaller percentage of the cost of operating trucks than the cost of cotton in most articles of clothing is of the retail price of that clothing. But a large proportion of total cotton consumed in the United States is used in clothing and is several times as large as the quantity of cotton used in tires. This consideration, except for the question of the extent to which the substitution of other cottons for Uppers is influenced by changes in their prices, would point toward the conclusion that the demand for Uppers is less elastic than the demand for total cotton in the United States. Although it is quite possible that the United States demand for Uppers is more elastic than for total cotton, it is not at present definitely known whether this is true or not. However, it is believed that the elasticity of demand for Uppers is probably somewhat greater than that for total cotton, although it is probably not as much as ten times as great. But if it were supposed that the elasticity were ten times as great as that for total cotton the demand curve for Egyptian Uppers would have an elasticity of 2.6. A curve with a constant elasticity of 2.6 and passing through point P has been plotted in figure 4.

Estimating position and slope of foreign demand curve for Uppers

For reasons similar to those given for assuming that the United States demand curve for Egyptian Uppers passed through point P, it will be assumed that the foreign demand curve passed through point R in figure 4. Point R is the intersection of the ordinate of the post-duty actual average price of Uppers in the foreign market of 11.97 cents per pound and the abscissa of the average post-duty foreign consumption (taken as production less United States imports) of Uppers of 1,076,100 bales.

As in the case of the domestic demand curve, it will be necessary to estimate the elasticity of the foreign demand in order to be able to draw the curve. Although there is even less information concerning the elasticity of the foreign demand than is the case with respect to domestic demand, there are certain reasons for believing that the foreign demand for Uppers is more elastic than the domestic demand. In the first place there are fewer different kinds of long-staple cotton competing with Uppers in the United States market than in foreign markets. Other things equal, this would tend to increase the possibility of substitution of competitive growths over a wider range of uses in the foreign, than in the domestic, market. It also would tend to make foreign consumption of Uppers show a bigger percentage change in foreign countries than in this country as a result of a given percentage change in its price. Secondly, the fact that average income of consumers in foreign countries is lower than in the United States would point toward the same conclusion.

Though it is believed that the foreign demand for Uppers is more elastic than the domestic demand, it is assumed to be slightly less elastic, or 2.5, since by so doing it tends to increase the effect of the tariff on the foreign price. A foreign demand curve with a constant elasticity of 2.5 is drawn through point R in figure 4.

Estimating position and slope of foreign supply curve for Uppers

For reasons similar to those given in connection with the other two curves, it will be assumed that the foreign supply curve passed through point S in figure 4. Point S is the intersection of the abscissa of the post-duty actual average foreign price of Uppers of 11.97 cents per pound and the ordinate of the actual average foreign production of Uppers of 1,112,000 bales.

One analysis of the effect of changes in the price of Uppers cotton on the acreage of cotton in Upper Egypt in the period 1915-34, after allowing for changes in the prices of competing crops 39/, indicated that in the post-duty period the acreage responded to changes in Uppers price with an elasticity ranging from 0.5 to 0.9. Even if there were no question but that this analysis indicated the true elasticity of supply for Uppers cotton during the period covered by the analysis, the elasticity of supply might be considerably different for the 7 years ended 1936-37. Instead of using these values for the elasticity of the foreign supply of Uppers cotton, therefore, a much more inelastic supply has been assumed, namely 0.1, in order to make reasonably sure that the foreign price incidence obtained will be a "reasonable maximum". A foreign supply curve for Uppers with a constant elasticity of 0.1 has been drawn through point S in figure 4.

Price incidence of the duty

In figure 4 the actual average post-duty prices and the quantities produced, consumed, and imported, are shown by the solid lines as being in "equilibrium" with the duty in effect and the broken lines indicate a new "equilibrium" situation for the same period but without the duty in effect. The "without duty" equilibrium is obtained under the assumption that the removal of the duty does not change the demand and supply curves used to get the "with-duty" equilibrium.

For the United States and foreign prices of Uppers to be in equilibrium when any set of supply and demand curves is given, if the United States is importing the product, the prices in the two markets must meet both of the two following requirements:

(1) The prices in the two markets must differ by the amount of the duty, if any, plus freight and any other cost of importation. It is obvious that this must be true if Uppers continued to be imported since the importers would not continue to bring this cotton in and sell it at less than cost.

(2) The prices must intersect the demand and supply curves at a level at which world supply (production plus carry-over at beginning of period) will equal world demand (consumption plus carry-over at end of season). 40/

39/ The World Cotton Situation, Foreign Cotton Production, Section on Egypt, pages 7-8.

40/ Due to lack of information concerning foreign carry-over, it has been necessary to omit carry-over throughout this analysis.

Because there is no United States production of Uppers or exactly similar cotton, the second requirement is equivalent to saying that the domestic price must intersect the domestic demand curve at a level at which imports will equal the difference between the foreign demand (or as used here, consumption) and the foreign supply (or as used here, production) as set by the intersection of the equivalent foreign price with the foreign demand and supply curves.

An examination of the solid lines in figure 4 will show that both of the above requirements have been met. With respect to the first requirement, it will be seen that the foreign price averaged 10 cents per pound lower than the domestic price (11.97 cents as compared with 21.97 cents) which is about 7 cents greater than the average spread between the New England price and the Alexandria price during several years prior to June 1930. (See page 8.)

As to the second requirement, it will be seen that the domestic price of 21.97 cents intersects the domestic demand curve at 35,900 bales on the scale representing United States imports. The corresponding foreign price of 11.97 cents cuts the foreign demand curve at a consumption of 1,076,100 bales and the foreign supply curve at a production of 1,112,000 bales. Thus, at a foreign price of 11.97 cents, foreign countries were willing to export the difference between what they were willing to consume at a price of 11.97 cents (or 1,076,100 bales) and what they were willing to produce at that price (or 1,112,000 bales) a difference of 35,900 bales. At the corresponding domestic price of 21.97 cents the United States was willing to import the 35,900 bales.

In the determination of the "without-duty" equilibrium prices, it was assumed that the duty was the only factor accounting for the inter-market spread which changes when the duty is removed. Since the duty is 7 cents, its removal should, and because of competitive forces would, reduce the inter-market price spread about 7 cents, or from 10 cents to 3 cents. Therefore, in order to meet the first requirement, the inter-market price spread without the duty must be 3 cents per pound. If an inter-market price spread of 3 cents between the price in these markets without the duty is assumed, the next question is the determination of the absolute level of the price in each market. This absolute level is found by moving the level of prices in both markets up or down the curves in figure 4 until a level is reached at which their intersections with the curves equate the United States demand for imports to the foreign supply of exports at the new prices. In other words, while keeping the 3-cent price spread, the price lines are shifted vertically until they intersect each of the three curves at a point where the quantity on the scale representing domestic imports equals the difference between foreign production and foreign consumption. It will be noted that the broken price lines in figure 4 meet this second requirement for a new equilibrium at a new United States price of 15.23 cents, and at a new foreign price of 12.23 cents.

It should be noted that the "without-duty" foreign price of 12.23 cents per pound is only 0.26 cents per pound higher than the "with-duty" foreign price of 11.97 cents per pound. In other words, with the demand and supply curves assumed here, the duty had a very small effect on the foreign price of Uppers if it is assumed that the application or removal of the duty would not change the curves themselves. The elasticities used and the indicated incidence of the duty on the foreign and United States prices are given in the following tabulation:

	Elasticities shown in figure 4
Domestic demand	2.6
Foreign demand	2.5
Foreign supply	0.1
Indicated effect of removing duty on:	
Foreign price of Uppers	(+) 0.26¢ per lb.
U.S. price of Uppers	(-) 6.74¢ per lb.

These conclusions, as previously indicated, rest on the assumption that the curves were not shifted by the removal of the duty. It is believed, however, that certain of the curves would have been shifted at least slightly by its removal and it is therefore necessary to examine the effect of such shifts on the above conclusions.

With respect to the effect of the imposition or removal of the duty on the curves used in this analysis, it should first be noted that the supply curve for Uppers would not be shifted since this curve is only shifted by changes in the costs of production and by changes in the profitableness of crops competing for the land and labor used to produce Uppers cotton none of which are significantly affected by the duty on long-staple cotton.

It is believed that if there had been no duty in effect during the post-duty period both the domestic and foreign prices of American long-staple Upland would have been very slightly lower than they actually were. This is based on the reasoning in preceding sections of the text.

But American long-staple Upland is, to a certain extent, competitive with Egyptian Uppers. Therefore, if the price of American long-staple Upland had averaged slightly lower during the last 7 years in both the domestic and foreign markets, in the absence of a duty, this, in itself, would have had the tendency to cause the consumption of Egyptian Uppers in both markets to be less at any given price for Uppers than it would have been if the price of the American cotton had been higher. This is equivalent to saying that in estimating the effect of removing the duty it should be assumed that its removal would, other things being equal, move both the domestic and foreign demand curves for Uppers slightly to the left of their "with-duty" positions shown in figure 4 and that the "without-duty" equilibrium prices should be determined from these "without-duty" curves rather than from the "with-duty" curves.

No attempt has been made to estimate the distance each demand curve would have been moved to the left by the removal of the duty. This depends upon all factors that influence the substitution of the two cottons. But, since, as already shown, the removal of the duty would have shifted them both to the left, it necessarily follows that if the "without-duty" equilibrium prices had been determined using the shifted or "without-duty" curves, the Uppers prices thus determined in both markets and therefore the price incidence in the foreign market would have been lower than those determined from the "with-duty" curves used in figure 4.

Even if it is assumed that the elasticity of the curves used in figure 4 were correct, it would appear, therefore, that the shifts in the positions of the curves which would result from the removal of the duty would cause the price incidence in the foreign market to be less, and that in the domestic market to be greater, than indicated by the figure. In addition to this it should be remembered that in estimating the elasticities of the curves that were used in figure 4, elasticities were selected which it is believed give a foreign price incidence which is at least slightly greater than the actual incidence. For these two reasons, therefore, it appears that if there had been no duty during the 7 years ended 1936-37 the price of Egyptian Uppers in foreign markets would have averaged less than $\frac{1}{4}$ cent higher and the price in the United States more than $6\frac{3}{4}$ cents lower than the actual prices existing during this period.

As has been previously explained, in estimating the elasticities used in figure 4, concessions were made which tended to cause the foreign price incidence to be at least slightly greater than what was believed to be the case. The principal reason why these elasticities indicated such a small foreign price incidence in spite of these concessions was the very great difference in the size of the two markets.

In principle, the three things of dominating importance in determining the price incidence of any duty are: First, the relative size of the markets; second, the relative elasticity of demand in one market compared with the demand in the other market; and third, the relative elasticity of supply in the two markets. Other things equal, the larger the foreign market compared with the domestic market and the more elastic the foreign demand and supply compared with the United States demand and supply, the smaller is the incidence of the duty on the foreign price.

In the present analysis, it is known that the foreign market is 30 times as large as the domestic market and this great difference in size would cause very little of the incidence of the duty to be on the foreign price if the domestic and foreign elasticities of demand and supply were equal. It is also known that the foreign supply is more elastic than the domestic supply, since this cotton is not produced in the United States and this fact would also cause less than half of the incidence of the duty to be on the foreign price if the markets were equal in size and the elasticity of demand were the same in the two markets. But in figure 4 the foreign supply was assumed to be only very slightly more elastic than the domestic supply (.1 compared with 0) as one of the concessions mentioned above. Therefore in figure 4 the relative elasticity of supply is not an important factor tending to minimize the foreign price incidence. On the other hand, it was estimated that the elasticity of demand in the two markets was about equal and this, other things equal, would have placed about 50 percent of the incidence of the duty on the foreign price. The fact that the incidence obtained was so small is therefore primarily a result of the extreme difference in the size of the two markets. As a test of this conclusion a separate calculation of the incidence was made using the same elasticities as in figure 4 but reducing foreign consumption to 35,900 bales (the domestic consumption with the duty in effect) and reducing foreign production an appropriate amount. Under these assumptions the incidence of the duty was, as expected, about evenly divided between the prices in the two markets since the foreign price incidence was 52 percent of the duty.

Table 1.- Cotton, United States: Production of American Upland by States, specified staple lengths, and percentage each State is of total production, 7-year average 1930-31 to 1936-37

State	Short-staple (shorter than 1-1/8")		Long-staple (1-1/8 inch and longer)								Total Upland	
			1-1/8" and 1-5/32"		1-3/16" and 1-7/32"		1-1/4" and longer		Total long-staple			
	Quantity	Percentage of U.S. total	Quantity	Percentage of U.S. total	Quantity	Percentage of U. S. total	Quantity	Percentage of U. S. total	Quantity	Percentage of U. S. total	Quantity	Percentage of U. S. total
	1,000 running bales	Percent	1,000 running bales	Percent	1,000 running bales	Percent	1,000 running bales	Percent	1,000 running bales	Percent	1,000 running bales	Percent
Alabama	1,115.5	9.5	1.1	0.2	0.3	0.2	0.1	0.7	1.5	0.2	1,117.0	8.9
Arizona	102.0	.9	5.1	.8	1/	2/	0	0	5.1	.7	107.1	.9
Arkansas	1,045.7	8.9	77.9	12.9	12.0	9.4	.7	4.9	90.6	12.2	1,136.3	9.1
California	176.5	1.5	63.4	10.5	.5	.4	0	0	63.9	8.6	240.4	1.9
Florida	30.4	.3	0	0	0	0	0	0	0	0	30.4	.2
Georgia	1,149.7	9.8	1.5	.2	.2	.2	1/	3/	1.7	.2	1,151.5	9.2
Louisiana	587.8	5.0	37.0	6.2	4.5	3.5	.3	2.1	41.8	5.6	629.6	5.0
Mississippi	935.0	7.9	343.4	57.1	94.2	73.6	10.5	73.9	448.1	60.2	1,383.1	11.0
Missouri	239.9	2.0	1.0	.2	1/	2/	.1	.7	1.1	.2	241.0	1.9
New Mexico	76.9	.6	9.1	1.5	1/	2/	0	0	9.1	1.2	86.0	.7
North Carolina	673.2	5.7	5.6	.9	2.0	1.6	.6	4.2	8.2	1.1	681.4	5.4
Oklahoma	795.7	6.8	1.7	.3	.1	.1	0	0	1.8	.2	797.5	6.4
South Carolina	765.5	6.4	34.3	5.7	13.1	10.2	1.8	12.7	49.2	6.6	814.7	6.5
Tennessee	422.7	3.6	2.8	.5	.3	.2	1/	3/	3.1	.4	425.8	3.4
Texas	3,620.6	30.7	17.6	2.9	.7	.5	1/	3/	18.3	2.5	3,639.0	29.1
Virginia	34.6	.3	0	0	0	0	0	0	0	0	34.6	.3
All other States	11.1	.1	.3	.1	1/	2/	0	0	.3	.1	11.4	.1
United States	11,782.8		601.8		128.0		14.2		744.0		12,526.8	

1/ Less than 50 bales. 2/ Less than 0.05 of 1 percent. 3/ Less than 0.3 percent.

Table 2.- Cotton, Egyptian Uppers, except as noted: Prices of Fully Good Fair at New England Mill Points and Alexandria, production, imports, carry-over, and disappearance in United States, 1922-36

Season beginning August 1	Price at New England Mill Points	Price at Alexandria	Production of Egyptian cotton other than Saks. and other extra long-staple 1/	Stocks of Egyptian 1-1/8 to 1-11/32 inches on hand in the U.S. beginning of season	General imports 1-1/8 - 1-3/8 inches 2/	Disappearance in the U. S. 3/
	Cents per pound	Cents per pound	1,000 bales 478 pounds	1,000 bales 500 pounds	1,000 bales 500 pounds	1,000 bales 500 pounds
1922	32.25	26.87				
1923	38.47	34.81				
1924	36.56	32.58	989			
1925	28.10	25.01	922			
1926	22.71	20.19	970			
1927	30.14	27.28	739			
1928	25.51	22.45	1,146	32.6	180.9	133.4
1929	22.22	19.70	1,209	80.1	116.7	128.1
Av.1928-29	23.86	21.08	1,178	56.4	148.8	130.8
1930	21.32	12.18	1,218	68.7	19.7	59.6
1931	17.36	7.56	945	28.8	54.3	66.3
1932	19.22	9.37	667	16.8	35.7	35.6
1933	22.17	11.91	1,335	16.9	69.2	66.8
1934	23.80	13.54	1,106	19.3	27.6	27.5
1935	24.41	13.95	1,219	19.4	23.5	23.8
1936 4/	25.54	15.31	1,295	19.1	21.1	28.0
Av.1930-36	21.97	11.97	1,112	27.0	35.9	43.9
1937 4/			1,542	12.2		

1/ Before 1930-31 these estimates include all Egyptian cotton other than Sakellaridis. Beginning in 1930-31 data include all Egyptian cotton except that reported by Egyptian Government as over 1-3/8 inches. Due to differences in classifications (Note 3,table 8) some of the cotton reported as over 1-3/8 inches according to Egyptian classification is less than 1-3/8 inches according to official U.S.standards. This tends to make these figures too small beginning in 1930-31. This is at least partially offset by inclusion of Scarto and by the fact that some additional Egyptian cotton is slightly less than 1-1/8 inches in staple. 2/ General imports of Egyptian cotton up to 1-3/8 inches compiled from unpublished data of the U.S.Tariff Commission. Since United States stocks include stocks in Government bonded warehouses, general imports are used (rather than imports for consumption) for calculating disappearance in United States. Prior to June 18, 1930 imports of all Egyptian under 1-3/8 inches are used,but very little is under 1-1/8 inches. 3/ Stocks at beginning of season plus general imports less stocks at end of season. 4/ Preliminary.

Prices at New England Mill Points from records of Bureau of Agricultural Economics. Prices at Alexandria from official and reliable trade sources. Production and stocks are from official sources. Imports compiled from reports of and unpublished data of the U.S.Tariff Commission.

Table 3.- Pneumatic casings and fabrics: Estimated production and cotton content, United States, specified years

"Crop years" 1/	Production of pneumatic casings for-				Estimated raw cotton consumed in tire fabrics	
	Passenger cars 2/	Trucks and busses 2/		Total 3/	Total 4/	Average per casing
		Total	Percentage of total			
	Thousands	Thousands	Percent	Thousands	1,000 bales 5/	Pounds
1927-28	65,926	5,458	7.6	71,384	649	4.4
1928-29	69,554	6,118	8.1	75,672	699	4.4
1929-30	56,558	5,572	9.0	62,130	580	4.4
Av. 1928-29 and 1929-30	63,056	5,845	8.6	68,901	640	4.4
1930-31	45,262	4,590	9.2	49,852	472	4.5
1931-32	40,260	4,153	9.4	44,412	426	4.6
1932-33	38,038	4,657	10.8	42,694	422	4.8
1933-34	40,502	5,767	12.4	46,268	472	4.9
1934-35	42,168	6,130	12.7	48,298	500	5.0
1935-36	47,072	6,668	12.4	53,739	554	4.9
1936-37 6/	49,530	7,170	12.6	56,700	593	5.0
Av. 1930-31-1936-37	43,262	5,591	11.4	48,852	491	4.8

1/ In order to make the data included in this table more nearly comparable with the crop year data used throughout most of the report data for each two consecutive calendar years were averaged and these averages given here as representative of crop years. 2/ The division of total production into passenger car and truck and bus casings was made as follows:- estimates for calendar years 1927-31 were based on percentages published in Special Circular No. 3500 of the Rubber Section, Dept. of Commerce; 1932-34, 1936 and 1937 from reports of the Rubber Manufacturers' Association; and 1935 from Census of Manufactures. 3/ Cotton Used in Tire Fabrics, by R. J. Cheatham and A. M. DuPre, U.S.Dept. Agriculture (Mimeograph, page 14) except 1937 which is from reports of the Rubber Manufacturers' Association. 4/ Cotton Used in Tire Fabrics, by R. J. Cheatham and A. M. DuPre, U.S.Dept. Agriculture, page 9, Estimated from reports of the Rubber Manufacturers' Association, allowing 15 percent for waste. 5/ Bales of 478 pounds net weight. 6/ Preliminary.

Computed from reports of the Department of Commerce, Bureau of Labor Statistics, Rubber Manufacturers' Association and United States Department of Agriculture.

Table 4.- Type and staple length of cotton used in tire fabric in United States, specified periods

Type and staple length	1928		1932		Yr.begin.Aug.1, 1935	
	Quantity	Percentage of total	Quantity	Percentage of total	Quantity	Percentage of total
	1,000 bales 500 lb.	Percent	1,000 bales 500 lb.	Percent	1,000 bales 500 lb.	Percent
Uppers			31.5	8.4	1/ 18.9	3.4
Sakellaridis			6.0	1.6	2/ .9	.2
Total Egyptian 1-1/8 inches and over	150.0	21.4	37.5	10.0	19.8	3.6
Upland 1-1/8 inches and over			34.0	9.1		
Pima (American Egyptian			4.5	1.2		
Total American 1-1/8 inches and over	60.0	8.5	38.5	10.3	3/4/ 143.0	26.2
Total long-staple 1-1/8 inches and over	210.0	30.0	76.0	20.3	162.8	29.8
Cotton under 1-1/8 inches	490.0	70.0	5/ 298.8	79.7	3/ 382.9	70.2
Total cotton used in tire fabric	700.0	100.0	6/ 374.8	100.0	545.7	100.0

1/ All Egyptian cotton under 1-11/32 inches.
2/ All Egyptian cotton 1-11/32 inches and longer.
3/ Running bales.
4/ This is the consumption of all American cotton 1-3/32 inches and over, but very little is 1-3/32 inches.
5/ Total less long staple.
6/ Estimated from tire fabric consumption. Data from table 3 raised to equivalent 500-pound bales.

Data for 1928 from Tariff Hearings before the Committee on Ways and Means, 1929 revised print, pages 8,502-8,507. Data on long-staple cotton in 1932 are estimates appearing in Long Staple Cotton, report of the United States Tariff Commission, 1935, page 55 except as noted. Data for the year beginning August 1, 1935 are from Cotton Used in Tire Fabrics, by R. J. Cheatham and A. M. DuPre', U.S. Dept. of Agriculture.

Table 5.- Estimated raw cotton content of thread produced in the cotton goods industry, United States, specified census years

Year	Cotton thread produced	Equivalent raw cotton content of thread produced 1/
	1,000 lb.	1,000 bales 2/
1929	25,250	75.5
1931	19,576	58.5
1933	27,755	82.9
1935	34,854	104.2
Av. 1931, 1933 and 1935	27,395	81.9

1/ Pounds of thread produced in the cotton goods industry from Census of Manufactures converted to equivalent raw cotton assuming the weight of the thread is 70 percent of the weight of the equivalent raw cotton. 2/ Bales of 478 pounds net weight.

Table 6.- Cotton: Estimated quantity of specified types of long-staples used in the production of thread, United States, specified years 1/

Type	1929		1932		1933	
	Quantity	Percentage of total	Quantity	Percentage of total	Quantity	Percentage of total
	1,000 bales 2/	Percent	1,000 bales 2/	Percent	1,000 bales 2/	Percent
Sakellaridis	37.6	49.8	38.1	53.9	40.0	48.2
Pima	1.7	2.2	.1	.2	.2+	.3
Other 1-3/8 inches and over	.4	.6	.2	.3	.2+	.3
Total extra long-staple	39.7	52.6	38.4	54.4	40.5	48.8
American Upland long-staple	23.2	30.7	30.2	42.7	41.8	50.4
Egyptian Uppers	11.1	14.7	2.0	2.8	.4	.5
Other 1-1/8 to 1-3/8 inches	1.5	2.0	.1	.1	.2	.3
Total 1-1/8 to 1-3/8 inches	35.8	47.4	32.3	45.6	42.4	51.2
Grand total 1/	75.5	100.0	70.7	100.0	82.9	100.0

1/ It is believed that very little cotton under 1-1/8 inches is used in thread.
2/ Bales of 478 pounds net weight.

All percentages are from the U.S. Tariff Commission report, Long Staple Cotton, 1935, page 57, and are estimates. Grand total bales of cotton used in thread in 1929 and 1933 are estimates based on the production of thread in those years. Grand total cotton used in thread in 1932 is an estimate based on the average production of thread in 1931 and 1933. Thread produced in the cotton goods industry from the Census of Manufactures is converted to equivalent raw cotton assuming that the weight of the thread is 70 percent of the cotton used to produce the thread. To the grand total cotton as thus determined the given percentages were applied to derive the bales of each type of cotton used. The 1933 percentages are based on the first 9 months only.

Table 7.- Cotton, American Upland long-staple: Price per pound and premium over 7/8-inch at Memphis, production, carry-over, supply, exports, and disappearance, 1920-37 1/

Season beginning August 1	Price at Memphis: 1-1/8"	Price at Memphis: Premium over 7/8"	Carry-over beginning of season	Production	Supply 2/	Exports 3/	Disappearance in U.S. 4/
	Cents per pound	Cents per pound	1,000 running bales	1,000 running bales	1,000 running bales	1,000 running bales	1,000 running bales
1920	24.27	7.07					
1921	23.51	5.13					
1922	28.06	1.85				5/ 811.9	
1923	31.78	1.36				5/ 915.0	
1924	28.49	4.30				5/1,537.0	
1925	23.96	4.19				5/1,310.2	
1926	16.85	2.54				5/1,542.3	
1927	22.14	2.70				5/1,100.9	
1928	20.84	2.53	491.9	685.6	1,177.5	5/ 867.8	6/
1929	17.75	2.32	302.9	683.4	986.3	5/ 328.9	6/
Av.1928-29	19.30	2.42	397.4	684.5	1,081.9	598.4	6/
1930	11.22	2.00	423.5	456.9	880.4	179.7	325.8
1931	7.11	1.52	374.9	845.6	1,220.5	198.4	268.8
1932	8.10	1.06	753.3	712.3	1,465.6	214.1	519.4
1933	12.21	1.55	732.1	790.2	1,522.3	143.5	714.1
1934	13.64	1.40	664.7	823.0	1,487.7	37.2	952.8
1935	13.18	1.68	497.7	670.7	1,168.4	43.1	823.0
1936	15.81	3.36	302.3	908.4	1,210.7	23.4	810.9
Av. 1930-36	11.61	1.80	535.5	743.9	1,279.4	119.9	630.7
1937 7/			376.4	950.0	1,326.4		

1/ All data are for American long-staple Upland 1-1/8 inches and over in staple length. Most American long-staple Upland is 1-1/8 and under 1-3/8 inches. 2/ Carry-over at beginning of season plus production. 3/ Exports of all cotton 1-1/8 inches and longer, include Sea Island since December 1928, and American-Egyptian (Pima) prior to 1929 only. 4/ Supply less exports less carry-over end of season. 5/ May be too large because prior to Jan. 1, 1930 exports were reported on the basis of commercial rather than official standards. 6/ Disappearance for 1928-29 and 1929-30 were not calculated because exports were too large by an unknown quantity. 7/ Preliminary.

Prices, carry-over, and production are from reports of the Bureau of Agricultural Economics. Exports are from reports of the Bureau of Foreign and Domestic Commerce.

Table 8.- Cotton, Egyptian extra long-staple 1/: Prices at New England Mill Points and at Alexandria, production, United States imports, carry-over, disappearance, and consumption, 1922-37

Year beginning August 1	Price of Sakellaridis, fully good fair: At N.E. Mill Points	At Alexandria 2/	Production 3/	Imports 4/	Stocks August 1 5/	U. S. disappearance 6/	U. S. consumption 7/
	Cents per lb.	Cents per lb.	1,000 bales 478 lb. net	1,000 bales of 500 lb.	1,000 bales of 500 lb.	1,000 bales of 500 lb.	1,000 bales of 500 lb.
1922	40.60	30.83					
1923	44.70	37.39					
1924	59.32	56.29	518				
1925	40.32	36.61	728				
1926	30.97	28.91	616				
1927	39.19	37.51	522				33.8
1928	37.32	35.22	526	115.6	31.3	98.1	54.0
1929	30.48	28.53	559	99.4	48.8	71.8	64.2
Av.1928-29	33.90	31.88	542	107.5	40.0	84.9	59.1
1930	25.00	17.22	497	3.2	76.4	45.6	37.2
1931	19.23	9.56	378	22.3	34.0	13.0	
1932	20.65	10.64	361	29.9	43.3	43.2	8/ 48.0
1933	25.36	14.84	442	43.1	30.0	32.5	
1934	26.18	15.53	460	38.8	40.6	50.9	
1935	27.25	16.57	550	37.4	28.5	43.4	
1936	30.48	19.81	592	59.2	22.5	49.1	
Av.1930-36	24.88	14.88	469	33.4	39.3	39.7	
1937			740		32.6		

1/ Except in the case of prices. 2/ Compiled from Monthly Agricultural and Economic Statistics, Ministry of Finance, Egypt, and converted from tallaris per cantar to cents per pound at current rates of exchange. 3/ From official sources and International Institute of Agriculture. Production of Sakellaridis through 1929-30. Small amounts of Sakellaridis may be less than 1-3/8 inches in staple length. Beginning 1930 these figures represent the ginnings of Egyptian cotton listed in official reports of the Egyptian Government as over 1-3/8 inches. These ginnings listed as over 1-3/8 inches include the total ginnings of the following varieties: Sakellaridis, Giza 7, Giza 26, Maarad, and Sakha #4. Some of the cotton shipped to the United States as these varieties have been classed according to the official United States staple standards as short as 1-5/16 inches, consequently these estimates are probably somewhat too large. This is believed to be more especially true in the last 7 or 8 years. 4/ General imports of cotton 1-3/8 inches and longer from Egypt. Through 1933-34 from Long Staple Cotton, U. S. Tariff Commission, p. 81. Later years compiled by U.S.Tariff Commission from unpublished sources. Reason for using general imports rather than imports for consumption is given in footnote 2/, table 2. 5/ Egyptian cotton 1-3/8 and up from Grade, Staple Length, and Tenderability of Cotton in the United States 1928-29 to 1936-37. Department of Agriculture,and later releases. 6/ Imports plus stocks at beginning less stocks at end of year. 7/ Consumption of Egyptian cotton 1-3/8 inches and up in length from Staple Length of Foreign-grown Cottons Consumed in the United States, 1928-31, Bureau of Agricultural Economics (Mimeograph.) 8/ Estimated consumption for the calendar year 1932 from Long Staple Cotton, U.S. Tariff Commission, p. 55.

Table 9.- Cotton, Pima (American Egyptian): Price at New England Mill Points, production, stocks, exports, disappearance, and consumption, 1920-37

Year beginning Aug. 1	Price of Pima No. 2 at New England Mill Points 1/	Production 2/	Stocks Aug. 1 2/	Exports 3/	U.S. disappearance 4/	U.S. consumption 2/
	Cents per pound	1,000 running bales	1,000 running bales	1,000 running bales	1,000 running bales	1,000 running bales
1920		92.6	-			16.8
1921		37.1	104.3			49.4
1922	36.66	32.8	59.5			65.2
1923	41.29	22.4	29.2			36.0
1924	58.31	4.3	15.2			19.0
1925	45.02	20.1	4.4			11.7
1926	5/ 37.77	16.2	9.5			19.7
1927	6/ 46.32	24.2	6.4			15.1
1928	42.71	28.3	5.8			13.5
1929	36.61	28.8	7.2	5.1	22.8	12.6
Average 1928-29	39.66	28.5	6.5			13.0
1930	25.36	23.3	8.1	1.1	13.6	15.4
1931	20.65	13.7	16.7	.4	13.5	12.4
1932	20.82	8.4	16.5	.5	14.6	17.8
1933	26.75	9.7	9.8	.5	12.0	12.5
1934	24.16	14.1	7.0	.2	12.3	11.3
1935	26.93	17.6	8.6	.5	18.7	21.4
1936	32.94	17.6	7.0	.2	18.9	20.1
Average 1930-36	25.37	14.9	10.5	.5	14.8	15.8
1937			7/ 5.5			

1/ Records of Bureau of Agricultural Economics.
2/ Production, stocks, and consumption are from "Cotton Production and Distribution", annual reports of the Bureau of the Census.
3/ Exports from Monthly Summary of Foreign Commerce of the United States.
4/ Production plus stocks at beginning of season less exports and stocks at end of season.
5/ Average of first 11 months.
6/ Average of last 9 months.
7/ Preliminary.

Table 10.- Fine Goods: Type of long-staple cotton used in fine goods in the United States in specified years

Type	1929	1932		1933
	Percent	1,000 eq. 500-lb. bales	Percent	Percent
Sakellaridis	1.76	3.0	1.13	1.90
Pima	3.35	8.2	3.76	2.61
Other 1-3/8 inches and over	.10		.16	.09
Total 1-3/8 inches and over	5.21		5.05	4.60
American Long-Staple Upland	94.37	250.0	94.49	95.40
Egyptian Uppers	.36	.3	1/	1/
Other 1-1/8 to 1-3/8 inches	.06		.46	1/
Total 1-1/8 to 1-3/8 inches	94.79		94.95	95.40
Grand total	100.00		100.00	100.00

1/ Included with Upland.

All data are estimates from the United States Tariff Commission report, "Long Staple Cotton", 1935. Percentages are from page 57. Bales in 1932 from page 55.